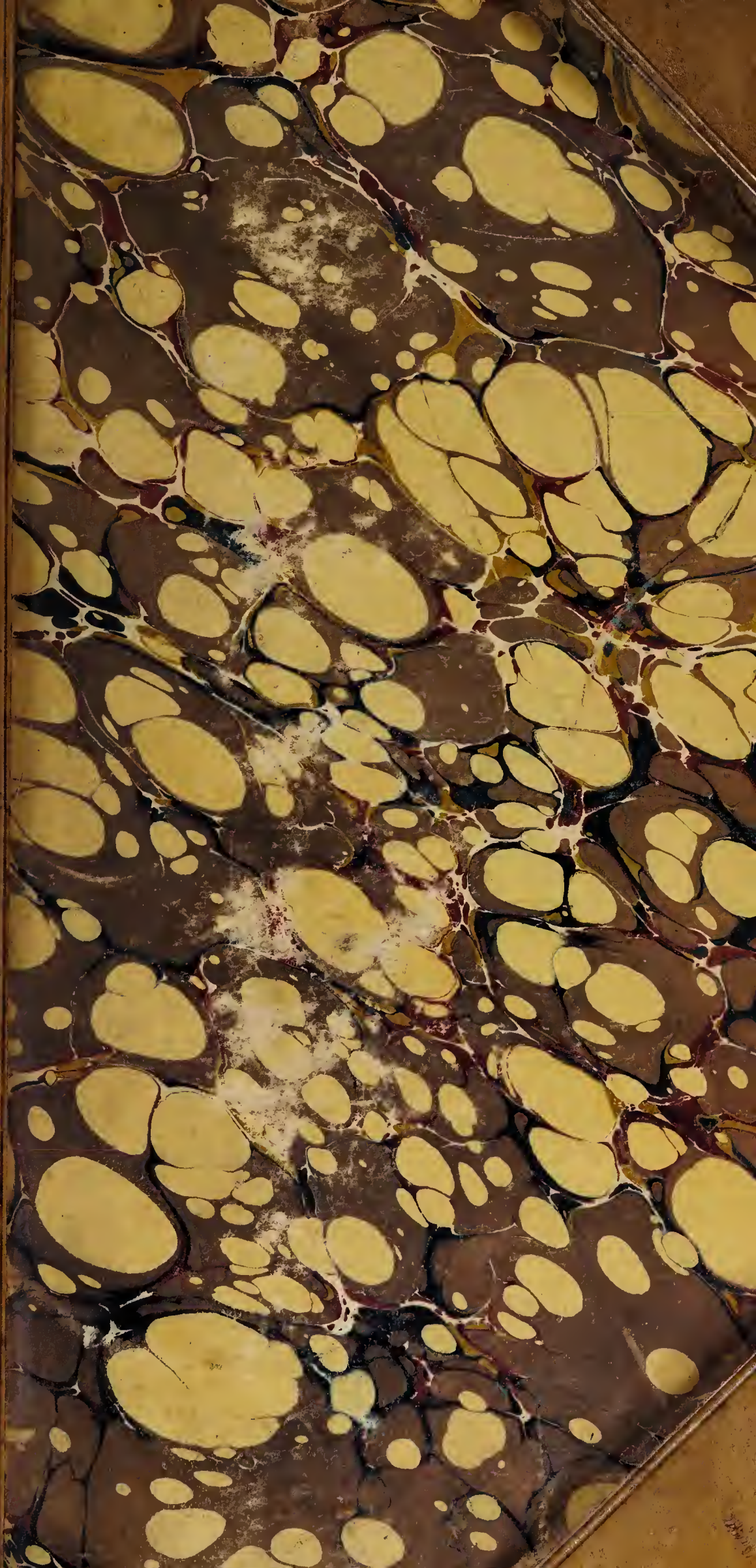

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CONTENTS.

PAGE

I. On the Materials used in Buildings by the ancient Romans — By Alexander Thomson, Esq. of Banchory 1

II. On certain Features of the Ancient Architecture of Scotland — By R. W. Billings, Esq., Architect 27

III. On the Drainage of Edinburgh — By Alfred Lancefield, Esq., C.E. 41

IV. On the Adaptation of previous Styles of Architecture to our Present Wants — By Alexander Christie, Esq., A.R.S.A. 57

V. On the Hills and Valleys, and the Walls and Gates of Rome — By Alexander Thomson, Esq. of Banchory. Part I. 77

Ditto, ditto. Part II. 93

VI. On the Ancient Tombs of Rome and its immediate Vicinity — By Alexander Thomson, Esq. of Banchory 111

VII. Remarks on Colour, as applied to Architecture — By C. Heath Wilson, Esq.. A.R.S.A. 157

Transactions of the Architectural Institute of Scotland.
Third Session, 1852-53.

No. I.

ON THE MATERIALS USED IN BUILDINGS BY THE ANCIENT ROMANS.

BY

ALEXANDER THOMSON, Esq.
of Banchory.

[*Read at the Meeting of the Institute in Edinburgh, 10th March 1853.*]

Until the middle of the eighteenth century, antiquaries trusted to ancient writers to enable them to determine the age and use of buildings from the imperfect notices they had left of them. Hence arose innumerable errors, and many of the ruins in Rome and its vicinity then received, and still bear, names indicative of uses to which, from their construction, they never could have been applied.

Piranesi, whose exquisite engravings of the ruins of Rome will probably never be equalled—at least in point of beauty—was the first to introduce the true system of investigating ruins, viz., by examining the plan of the building and its structure, and then using whatever light might be afforded

by ancient writers to elucidate the ideas thus obtained, and finally comparing the whole with other buildings whose age and purpose are indisputable.

There are two great classes of buildings—those of necessity, and those of luxury. The former are generally composed of the materials most easily procured, while the ornaments of the latter are brought from the most distant countries.

Wood was of course used in ancient buildings, but from its perishable nature, little of it is now to be seen. Besides the ordinary purposes for which it must have been used, it was occasionally employed to form pegs to rivet the stones to each other, and of this examples are to be found in the lofty wall at the Arco dei Pantani, the stones of which are fastened together in this manner. The wood appears to be olive, and to have been charred.

Stone and brick are the materials of which the ruins now remaining are principally composed.

In the state of almost constant war in which the petty states of Italy lived for many years, the defence of their towns was naturally an object of supreme importance. We find, therefore, the oldest cities of Italy surrounded by walls composed of polygonal stones so vast in their size, and so well united together, that they have defied the ravages of time and the assaults of man for, it may be, nearly thirty centuries.

Of the polygonal walls there are two kinds, one in which the polygons are formed of the natural uncut faces of the rock, selected so as to fit each other exactly, and the other when the faces of the stones are cut artificially: in neither is any cement employed to unite them. Another distinction has been made of polygonal walls, into Cyclopean, where the interstices betwixt the large masses are filled up with smaller

stones, and Pelasgic, where the whole wall is composed of *large* masses.* Of these polygonal walls no examples exist in Rome, and wherever they are found, they denote an age prior to the establishment of the Roman power. Excellent specimens of them remain at Palestrina (the ancient Præneste) about twenty-five miles from Rome; at Fiesole, near Florence; and at Cortona and Volterra.

The polygonal style, if it may be so termed, was succeeded by the quadrilateral, or opus quadratum of stone. In the oldest specimens of this work the stones are regular parallelopipedons, often of considerable size, and laid together without cement. The blocks sometimes extend in length, as in the Carcere Mamertino, and the Cloaca Maxima; sometimes in depth, as in the Carcere Tulliano. Wherever we find it *without* cement, it is a tolerably sure mark of an age prior to the end of the republic. During that period there was also another sort of work in use, where stones were cut into small cones and built like the brick opus reticulatum, and bedded in cement. The oldest instances of this are about the end of the Republic, and it does not appear to have continued beyond the time of Caracalla.† For this purpose the stones found on the spot were used. Thus at Tivoli, they were of travertin, and in Rome of tufo; and this latter is so like to bad bricks, that at a little distance it is liable to be mistaken for brickwork. It is commonly found forming the *facing* of a wall of other materials; and as the angles of buildings could not be formed of small stones, they were formed of brick, or of square blocks of the same stone. Examples occur in Sallust's Gardens, in the House of Mæcenas, and in the substructions of the baths of Titus.

Generally speaking, it may be said that until the seventh

* See Gell. i, 175, *Ardea*.

† Nibby, Foro, pp. 11 and 14.

century of Rome stones were principally used, but towards the end of the Republic bricks were introduced, and soon became the most common material. Probably the oldest specimen in Rome will be found in the ruins of Sallust's Villa (about A.U. 700) or about fifty years B.C. Brick work was either laterizia or reticulata. In the former the brick was laid flat; in the latter the bricks were placed so that the interstices betwixt the bricks presented the appearance of network, whence the name.

In important buildings the brick work was generally covered by stone or marble; so that now in looking at a brick ruin, we see only the interior of the walls. The aqueducts, however, and many other buildings, form exceptions to this remark.

The brick work of the age of Augustus was the finest in Rome; and it continued excellent during the whole of the first century of our era. In the ruins of the time of Nero, it is remarked, that in order to improve the exterior appearance the bricks were made not perfect parallelopipedons, but a little thicker towards the outside, so that no cement could be seen betwixt them. While in the brick work of Augustus and Tiberius the cement betwixt two bricks is equal to nearly the quarter of the thickness of a brick. The brick work of the Domus Aurea of Tiberius and that of the aqueduct of Nero is most beautiful.

In the times of Trajan and Hadrian (A.D. 99-138), the bricks themselves are excellent; but they are not so well put together. Under Septimus Severus and Caracalla (A.D. 193–197), the cement began to be equal in thickness to the bricks; and in the days of Diocletian (A.D. 284–304), there is more cement than brick. The bricks of his stupendous baths have evidently been collected from more ancient buildings.

About the end of the Republic, small polygons of stone

united with cement were sometimes employed, which was called opus incertum, as may be seen in the temple called of Romulus, under the Palatine, and also the upper part of the Temple of Fortune at Palestrina. A still rougher description of what we would term *rubble work*, and which also the Italians denominate frequently opere incerto, was early used for interiors, as may be seen in the Orti Domiziani and in Adrian's Villa. It is much used in buildings of the middle ages and of modern times. In the ancient specimens of it which we have examined, its strength and solidity appear to depend principally on the excellence of the cement.

Alternate parallel strata of brick and stones were sometimes used; but examples of this are not very common. One may be seen in a tomb on the Via Nomentana, immediately beyond the Porta Pia.

Although brick was the most usual material after the time of Augustus, yet stone buildings were still erected; and the same decay in workmanship after the first century of our era may be observed in them as has been remarked with regard to brick. Thus, in the Colosseum erected by Vespasian (A.D. 70–79), we find the masonry, whether the exterior of stone or the interior of brick, both laterizia and reticulata, to be wholly good.

In the time of Antoninus Pius (A.D. 138–161), the opus quadratum is better than the brick work, as in the Temple of Antoninus and Faustina; but in the third century we have the stone arch of Galienus (A.D. 260–269), of which the workmanship is very inferior.

The oldest buildings are distinguished by great simplicity of design and solidity of execution. At the commencement of the Empire there is more taste and elegance both in plan and execution. As the Empire advanced taste declined, and ornaments superabounded; and during the decline of the

Empire the few new buildings which were erected were composed of fragments of older edifices. Now the traveller may find miserable structures of the middle ages, or even of more recent times, in which broken pillars, statues, and *bassi relievi*, of no ordinary workmanship, are used as common building stones.

The principal stones employed were *Tufo*, *Peperino*, and *Travertino*, and to a small extent Basalt and Pumice. As the hills on which Rome is built are mostly composed of tufo, the greatest supply was probably derived from them; but it also abounds all around the city. It is a volcanic stone of a dull red colour, so soft as to be cut by a knife, and inclined to crumble down on exposure to the air. It was therefore generally used only in the interior of walls, or where it was covered with plaster.

The prisons under the Capitoline are parts of ancient quarries of tufo; and others are still to be seen under the Celian and Aventine Hills. It may also be seen at the Tarpeian Rock, which is extremely soft and brittle. The reddest tufo was brought from the vicinity of Gabii, where the quarries may still be examined, near the Via Collatina. Another supply of it was derived from Fidenæ, where extensive caverns remain, about six miles from Rome, on the Via Salaria. It was termed Red-stone by Vitruvius.*

It may be seen in use in some of the foundations on the Palatine—in the temple at St Nicolo ai Cæsarini—in the Temple of Fortuna Virilis—and the aqueduct of Claudius. When used for outside work, it was cut in very large masses, the better to resist the action of the air, as in Fortuna Virilis; in the Claudian aqueduct it was covered with plaster. The best specimens we remember of the red Gabian stone are at each end of the Ponte di Nono, near Gabii.

Peperino is another volcanic substance, being an indu-

* Lib. ii., c. 7, and Strabo, lib. v. See Nibby, sul Foro, p. 10.

rated mass of ashes and cinders, more or less compact, and abounding in minute crystals of Vesuvian, Pyroxene, &c. &c. It is said to derive its modern name from its resemblance to pounded pepper.* Peperino is of two sorts, tenero and duro; the one derived from the Alban Mount, Saxum Albanum, and the other from Gabii, Saxum Gabinum.

The Alban stone was much more durable than any tufo; but still it suffered from long exposure to the air, as may be seen in the remains of Servius Tullius' wall. Very many buildings in Rome of various ages are composed of it: the lining of the Mamertine prison is the oldest example, and the temple of Antoninus and Faustina one of the most modern, 800 years having elapsed between the construction of the one and the other. The well known sarcophagus of L. C. Scipio Barbatus is also formed of it. Tacitus† quotes an order of Nero, that the houses of Rome, after the great fire, should be rebuilt either of Alban or Gabine stone, because they were not affected by fire. The Gabine stone is in general appearance like the Alban, but it is much more compact, harder and more durable. The ancient quarries of it exist near the site of Alba Longa, and modern at Marino, at the foot of the Alban Mount. It must have been much more expensive in working, and is more rarely to be found in Rome. It abounds around the edge of the lake of Gabii, and the temple of Juno Gabina and the Ponte di Nono are admirable proofs of its durability.

Travertine, Saxum Tiburtinum, is a calcareous deposition, found along the course of the Anio and Aqua Albula, by whose waters it is deposited, but most plentifully in the neighbourhood of Tivoli, the ancient Tibur, whence its name. When first taken from the rock, it is soft, and easily cut; but the longer it is exposed to the air the harder it becomes.

* Nibby, Foro, p. 11. † Lib. 15, c. 43, ann.

This may be ascertained by comparing its state in the native rocks near Tivoli with the exterior walls of the Colosseum. It is still more striking (if the reader happens to visit Pæstum) to compare the soft deposition of the Silaro with the astonishingly hard fluted pillars of the Temple of Neptune, composed of the same substance. All marbles seem to become harder by exposure to the air: fragments of ancient statues can hardly be scratched by the chisel of the modern statuary.

It is white when taken from the quarry, but becomes yellow, or yellowish brown, after long exposure. From the ease with which it is wrought into any form at first, and the hardness which it acquires, it would be the best of all building stones were it not easily reduced to lime by the application of heat; and to this circumstance we are inclined to attribute the loss of many an ancient building which would even yet have been in existence had it been built of Peperine, or even of brick. It was used at first along with Peperine to strengthen the building, as in the Cloaca Maxima, and for the ornamental parts, as the Doric capitals and architraves of the Tabularium; and at length it formed the exterior of whole buildings, as the tomb of Cecilia Metella and others on the Via Appia, and the Colosseum.

Basalt.—Several streams of Basalt are found in the Campagna, and one in particular extends from the Rocca di Papa, on the Alban Hill, to within two miles of Rome, at C. Metella's tomb. It was principally used in paving roads and streets; but it is also to be found employed in consolidating and packing other stones, as in the interior of the wall of Servius Tullius and the Cloaca Maxima. Pumice was only used to lighten a building, as in the vault of the Pantheon and in the Colosseum. It is said to have been brought from Vesuvius. Bricks are found, both red and yellow, of diffe-

rent ages, the red being the harder and more durable. We have no remains of brick works, nor do we know the precise spots whence the clay was taken, unless we may venture to guess that the Monte Testaccio was the rubbish heap of a vast brick and tile work, and we know no other theory which so well accounts for its formation. Clay is abundant in the vicinity of Rome.

The bricks generally will be found to contain minute volcanic crystals, perhaps from the addition of pounded tufo, to make them harder. They were of various forms and sizes. Those used for facing walls of the time of Augustus were small and triangular, and kept together by courses of long bricks, which extended across the whole wall, or at least had a firm hold of the interior work. These larger bricks were generally square, and sometimes measured a foot and a half on the side. The building bricks became larger as the brick work became worse. Those used in arches, as in the aqueducts, are commonly 18 inches long, and not quite a foot in breadth. About the time of Constantine a practice was introduced of using large jars of baked clay (Testæ) to diminish the weight of a dome, or the upper part of a wall. This is a decided proof of the building not being older than the 4th century of our era, and is to be seen in the tomb of Helen, (Tor Pignatarra), the circus on the Appian Way, and the building near Santa Croce, named the temple of Venus and Cupid.

Vitruvius* speaks of sun-dried bricks as being used in his time, but none of them have been found in Rome, and we may hence infer that the sun of Italy was not sufficiently powerful to make them as durable as those of Babylon.

Much of the durability of the buildings in Rome is to be attributed to the excellence of the cement they employed, and

* Lib. ii, c. 3.

this excellence was derived from the use of Terra Pozzolana along with the lime.

Vitruvius gives minute directions for the composition of cement.* He divides sand into three sorts—*Fossicia,* or such as was dug from under ground, now termed Terra Pozzolana ; *Fluviatica,* river sand ; and *Maritima,* sea sand.

The Pozzolana was by far the strongest, three parts of it were used to one of lime ; of river or sea sand, two parts for one of lime, but with the addition, if possible, of one-third part of pounded bricks and tiles—river and sea sand being preferred for plaster work on account of their fineness, but for all building purposes the Pozzolana was used.

It is a volcanic substance, and very abundant in every part of the Campagna di Roma, and the extent to which it was used is shown by the vast caverns which form the catacombs, and which are the ancient *arenaria* whence it was dug. It is still used for the same purpose, and is even exported from Rome to other countries.

The name Pozzolana is said to be derived from the ancient Pulvis Puteolana, which was a similar substance, found near Puteoli, now Pozzuoli, but of the best quality, hardening under water, as may be seen in the ruins of the Mole at Pozzuoli.†

Lime was procured from any of the calcareous rocks or depositions which are found in the hills surrounding the Campagna, or along the course of the Anio and other streams. It was burned, as is now practised, and seems to have been mixed with the sand required *immediately* after.‡

After this brief account of the *necessary* materials used in buildings in ancient Rome, we proceed shortly to notice some of those used for show and splendour.

It was the boast of Augustus that he had found Rome brick, and left it marble, and after his time the passion for

* Lib. ii, c. 5. † Nibby, F. R. S. ‡ Vitruvius, L. xi, c. 5.

marbles increased until it might be termed a mania. Under the term '*Marmo*' the lapidaries of modern Rome include almost every stone capable of being polished—marbles, alabasters, granites, porphyries, and we suspect the ancient 'Marmor' had a meaning nearly as extensive.

It was not till near the close of the Republic that marble was first used in Rome, and the employment of it in any edifice proves at once that the building is not older than the sixth century of the city. The oldest building where it is now seen, of an ascertained date, is the tomb of Cecilia Metella, erected about A.U.C. 703, (Byron's 'proud round 'tower of other times,') and there it is only employed for the slab which exhibits the inscription, and for the ornaments of the frieze.

In the year of Rome 662, Lucius Crassus, the orator, brought to Rome six columns of Hymettian marble, twelve feet each in length, with which he adorned his house on the Palatine Hill, and on account of this Marcus Brutus bestowed on him the name of the Palatine Venus.*

In 666 Marcus Lepidus introduced columns of Numidian marble, and even used the same for door-sills; and in 670 Lucullus brought from an island in the Nile the black variety of marble which afterwards bore his name.†

Mamurra, so bitterly reviled by Catullus, the commander of the artificers in Cæsar's army in Gaul, ornamented his house on the Celian Hill with columns of Carrara and Cipollino marble (Marmor Lunense), and lined the whole walls with plates of the same,‡ the first instance mentioned of incrusting walls with marble. The discovery of a mode of cutting marble into thin slices is characterized by Pliny as an unreasonable mode of extending luxury.

* Pliny, lib. xxxvi, c. 3. † Pliny, lib. xxxvi, c. 6.
‡ Pliny, l. xxxvi, c. 6.

M. Æmilius Scaurus being Edile A.R. 694, entertained the people with shows at vast expense; and, among other things, we read that he adorned a temporary theatre with 360 marble columns, 38 feet in height.*

These are the earliest notices of the use of marble, but the employment of it speedily extended to every sort of building, public and private, and in such profusion, that Ovid feared the hills would disappear, asserting that the 'mountains decrease by the digging out of marble;'† and Pliny seems seriously to dread the consequences which might follow from cutting down and removing mountains erected by nature for most important purposes. 'We cut and remove 'those mountains for no other cause but our pleasure which 'it was even wonderful to have passed over. Our forefathers thought it almost a miracle that the Alps were 'passed by Hannibal, and afterwards by the Cimbrians; 'now they are cut into a thousand sorts of marbles, promontories are opened to the sea, and the world is in 'process of being reduced to a plain.'‡ These passages at least show the extent to which marble quarries were then worked for the use of the Romans.

The chief supply of white marble was derived from Luna, called 'Marmor Lunense,' and the same quarries are still wrought, and the marble is well known by its modern name of Carrara. The mountains remain in sufficient extent to supply the demand for ages to come, notwithstanding the fears of Ovid and Pliny.

The white marbles of Greece were also occasionally employed, as the Hymettian, mentioned above, which was found

* Pliny, Hist. Nar., lib. xxxvi, c. 2 and c. 15.

† Nec quia decrescunt effosso marmore montes.—*Ovid, de Arte Amandi*, 111–125.

‡ Pliny, lib. xxxvi, c. 1.

near Athens, the Pentelic, also from Attica, with which the temple of Jupiter Capitolinus was rebuilt by Domitian, and the celebrated Parian, which was principally employed for statuary, but which, according to Procopius, was used in coating the mausoleum of Hadrian.* The marble of Carrara was as good for all architectural purposes as any of the others, and much more easily obtained; yet all the remains of white marble found in Rome are commonly denominated erroneously Parian.

A coarse variety of dusky white marble was brought from the island of Thasos (now Thapso), on the coast of Thrace, and was used for the more ordinary purposes; at least Statius, to prove the splendour of a building, says Thasian marble was not admitted into it.† Seneca says that in his times fish-ponds were formed of that Thasian marble, with which at one time it was rare to adorn even temples.‡ The exterior of the pyramid of Caius Cestius is encrusted with this marble, and it must have been very common indeed in Rome if we are to give the name of Thasian to all the fragments of dusky white marble which are found.

Of coloured marbles, the most esteemed are the Rosso, Verde, and Giallo Antico, and Cipollino, Africano, and Pavonazetto.

Rosso Antico.—This marble is of a rich red colour, more or less broken by veins approaching to black, and frequently spotted with white. It is extremely beautiful, and, at least in large masses, of great rarity. It is uncertain where it was found, and even by what name it was known to the ancients, but Corsi conjectures it to be the Marmor Alabandicum, described by Pliny as black, inclining much to *purple.* Of this marble there exist two statues of fauns—one in the

* De Bello Goth., i, 23.

† Stat. Sylvæ, Baln. Etrusc., l. 34.

‡ Corsi, Pietre Antiche, p. 42.

Capitol and another in the Vatican; but the largest specimens are the fourteen noble slabs which form the double flight of steps leading to the high altar of the Church of San Prassede, and the two columns about fourteen feet high in the Camera dell 'Aurora of the Palazzo Rospigliosi, and two unpolished columns which formerly stood in the Chapel of San Severo at Naples, but have been purchased by the Grand Duke of Tuscany. We are not aware of any other large specimens, but in small pieces it is found in every museum in Italy, and among the fragments of most ruins of the empire.

Giallo Antico.—A yellow marble, the ancient Marmor Numidicum and Libicum, and, according to Pliny, an important part of the export trade of that province.* It is rarely of one uniform colour in large masses, but generally has veins of various shades of yellow or white or purple. The marble is very compact and fine grained, and it is found of very many shades of colour—from deep, almost orange yellow, to nearly white, like old ivory.† A very rare and beautiful variety is of a flesh colour, but this, it is said, may be produced artificially, by carefully heating the common Giallo. It is one of the most common, and also one of the most beautiful of the ancient marbles, and we have the satisfaction of seeing some noble specimens of it in the situations where they were originally placed, viz., the columns in the Pantheon, and those on the arch of Constantine.

Cipollino.—Marmor Carystium, from the neighbourhood of Carystus, in the island Eubœa. The ground colour of this marble is a dingy white, or very pale green, with veins and shades of a darker green. It has many veins of mica traversing the calcareous mass, and causing it to divide easily, like the layers of an onion, *i.e.*, Cipolla, whence its name.

* Pliny, l. xxxv, c. 3.

† Sid. Apoll. Apd. P. Cosi, p. 47.

It was not very highly esteemed in later times, being condemned by Statius,* along with the Thasian ; yet fragments of it are so frequent, that it must have been perhaps the most used of all foreign marbles in ancient Rome. It was also one of the first introduced, for it was employed, as already stated, by Mamurra in his house on the Celian. The columns of the Temple of Antoninus and Faustina, and those adjoining the Spada di Orlando, are specimens in the ancient site. When polished the wavy veins of this marble have a pleasing effect.

Africano appears clearly identified with Marmor Chium, from the island of Scio, in the Archipelago. It is difficult to say how it had the name of Africano in modern times, unless from its dark colour. The prevailing colour is dark grey or black, with clear spots and veins of almost every other colour, and in large masses it has a very rich appearance. The arch of Drusus on the Via Appia is adorned with columns of it, and it seems to have been much in fashion for pavements, of which many fragments may be seen among the ruins of Trajan's Forum. The largest specimens of this marble are the four pillars of the principal entrance of St Peter's, and that well known in Rome by the name of Porta Santa is a variety of it.

Pavonazetto.—This beautiful marble was apparently esteemed above all others by the ancients. It was known to them under various names—Docimenum, Sinadicum, Phrygium, Mygdonium, being found at the Castle of Docimus, near the town of Sinnada in Phrygia, and in the province of Mygdonia. It is often referred to by the Latin poets—

'Quod si dolentem nec Phrygius Lapis
'Nec purpurarum sidere clarior
'Delenit usus.'—Hor., *Carm.* iii. 1.

* Balneum Etrusci, l. 34.

'Quidve Domus prodest Phrygiis innixa columnis.'
TIBULLUS, iii., 3, 13.

'Quæ mihi Mygdonii Marmoris instar erant.'
OVID, *Epist. Herod*, xxi. 142.

Strabo mentions the quarries whence it is taken,* and that, though found at first in small pieces, it was afterwards obtained in large masses. Statius describes its appearance, and also notices the fable that it was coloured by the blood of Atys—

'Sola nitet flavis nomadum decisa metallis
'Purpura, sola cavo Phrygiæ quam Synnados antro
'Ipse cruentavit maculis lucentibus Atys.'
SYLVÆ, i., v. 36.

It has somewhat the appearance of an alabaster, being almost transparent. The colour is a clear white, with numerous veins of a dark-red or violet colour. Of this marble were twenty-four of the pillars of the great church of St Paolo fuori le mura, destroyed by fire in 1823, said to have been taken from the Mausoleum of Hadrian. This Emperor is also said to have employed 120 of them in the Temple of Juno and Jupiter, erected by him.† Twelve, however, may still be seen in the Church of San Lorenzo f. l. mura, and the statues of the captive kings on the Arch of Constantine are of this marble. Specimens of it are to be seen in almost every church in Rome. The columns of Phrygian Marble in the Basilica of Paulus Æmilius were very celebrated:—'Nonne, 'inter magnifica, basilicam Pauli columnis a Phrygibus mira-'bilem.'‡

These may be considered as the most important ancient

* Geogr., lib. xii. † Corsi, p. 59.
‡ Pliny, xxxvi, 15.

marbles, properly so called, although it would be very easy to extend the list to a great length.

We proceed to notice a few of the stones employed which are not, properly speaking, marbles.

Verde antico.—The ancient Lapis Atracius is as much prized for its beauty now as it was in ancient times. It is not a marble, but a variety of the precious Serpentine of mineralogists. It had its ancient name from the city of Atra in Thessaly, near which it was found. The general colour is a bright green, with spots of a darker green, other spots of shining black, and others of pure white. The colours are commonly bright and distinct, and the general appearance extremely pleasing. It was much employed by the ancients, as is very evident from the quantities now seen in the churches and palaces of Rome. As excellent specimens of it, we may mention the twenty-four columns which adorn the niches of the twelve Apostles in San Giovanni Laterano, and which are understood to have been taken from the baths of Diocletian.

Of the harder stones used by the Romans, the greater part were brought from Egypt, viz., Granite, Porphyry, and oriental or hard Alabaster.

Granite is either red or grey, and both were brought from Syene (Assonan), in Upper Egypt. It is extraordinary to observe the expense at which the Romans gratified their taste for obelisks and columns of this material. Red granite, Lapis Pyrrhopœcilus, was employed for obelisks, and we read of no fewer than forty-eight of these enormous masses, viz., six large, and forty-two smaller, brought at different periods to adorn the city, of which twelve only now remain, and of them, that in front of San Giovanni is the finest. It was also used for pillars, some of which remain in the Portico of the Pantheon, and in the central hall of the baths of Diocletian, now

S^a^. Maria degli Angeli, are eight superb columns in their original sites.

Grey granite, Lapis Psaronius, was used for pillars in many of the finest buildings; sometimes along with red, as in the portico of the Pantheon, but more commonly by itself, as in some of the buildings of Trajan's Forum, the Temple of Venus and Rome, and the Spada di Orlando. Both these granites take a very high polish, and seem to defy the assaults of time, for the sculpture of the hieroglyphics is as clear and sharp as when executed upwards of thirty centuries ago. The large masses are always very large grained, but smaller specimens are occasionally found of small grained varieties. Among the monuments called granite in Rome the mineralogist will find some to be granite, others syenite, and others gneiss.

Red Porphyry, lapis porphyrytes.—This stone is, if possible, harder and more durable than even granite, and of great beauty. The ground colour is purple or dark red, with very numerous small white spots, which are minute crystals of felspar. The colours are more or less bright in different specimens, but there are very few decided varieties. It is found with a black ground, and also with a green, but both of these are very rare.

Pliny describes it very correctly,—'Rubet Porphyrytes in 'eadem Ægypto, ex eo candidis intervenientibus punctis, Leu-'costictos appellatur. Quantis libet molibus cædendis suf-'ficiunt lapicidinæ.'* He also informs us that Triarius Pollio, the procurator of Claudius Cæsar, sent over statues of it, but that this example was neither approved nor followed. The quarries of this stone were near, and gave name to the city of Porphyrites, which seems to have been in Arabia, or on

* Lib. xxxvi, c. 7. (In some editions *Leptopsephos* is given, instead of *Leucostictos*.—Ed.)

the confines of Egypt, towards Arabia, but ancient writers are not agreed on this point, nor is the situation now known.* It was apparently unknown in Rome prior to the time of Claudius, for the porphyry in the Pantheon is ascribed to Septimus Severus. It became, however, so common, that in the time of Constantine it was known by the name of Roman stone (lapis Romanus.)

It was used for pillars, for pavements, and above all for funeral urns ; of which those of Constantine's daughter and his mother, in the Vatican (Sala a Croce Greca) are splendid specimens, in which, however, the workmanship is very inferior to the material. The urn, whether funereal or not, in the Capella Corsini at San Giovanni is still finer. It was also much used for vases of all sizes, one in the Vatican (Sala Rotonda) is about 50 feet in circumference, probably the ornament of an ancient bath. It is found in great abundance in all ruins of the empire after the time of Claudius, and was much used in buildings of the third and fourth centuries. In the Decadenza it was used for statues and bassi relievi.

Another celebrated variety of porphyry is known to the marble-cutters of Rome by the name of Serpentino Verde, green serpentine. It is the ancient Lapis Lacedæmonius, the quarries of it being at Mount Taygetus in Lacedæmon.

The prevailing colour of the base is dark green, with numerous angular crystals of felspar of a lighter green. Pliny† says of it 'Pretiossissimi quidem generis, Lacedæmo-'nium viride cunctisque hilarius.'‡ It is found only in small masses, and so it is described by Pausanius.§

It is extremely hard and difficult to work, and seems to have been only used for pavements, for which its hardness made it and red porphyry very suitable. Heliogabalus paved

* Nibby, Foro, p. 42. † xxxvi, 7. ‡ xxxvi, 7.
§ Laconica, lib. iii, apud Corsi, p. 124.

with them courts on the Palatine,* and afterwards this became very common. The grotto commonly called of Egeria was thus paved, and the Pantheon by Alexander Severus, and the church of Ss. Giovanni and Paolo, on the Celian, a building of the fourth century. Small fragments of it abound in every part of Rome, and there are many varieties of it in which the base varies from almost black to light green, and the crystals of felspar are of various shades from dark green to yellow.

Alabaster, lapis alabastrites.—This well-known calcareous deposition presents almost infinite varieties of colour. It was brought from Thebes in Egypt, and also from Arabia, from Damascus, and many other parts of Asia.

The Oriental is distinguished from the European by its superior hardness, and the latter is, from its perishable nature, rarely, if ever, found among ruins, if we except the beautiful Alabastro di Tivoli, employed by Hadrian in his villa, and which appears to have been brought from Terni, where it exists in abundance. Alabaster was at first used for unguent bottles, as it was supposed to preserve whatever was put into it,† and small vases and ornaments, but afterwards for lining walls for baths, and for pillars: of the latter one exists in the Villa Albani, twenty-two and a half feet in height. Cornelius Nepos, as quoted by Pliny,‡ speaks of having seen columns of alabaster thirty-two feet in length, and Pliny says he had himself seen upwards of thirty in the dining-hall of Callistus, the freedman of Claudius. Alabaster is easily reduced by fire to lime; and this may account for the few examples of it we now find in large masses.

The incrustations of Alabaster on the walls of the Borghese Chapel in S^a^. Maria Maggiore are a good example of its splendid effect.

* Lampsidius, c. 22. † Pliny, xxxvi, 8. ‡ Pliny, xxxvi, 7.

In no respect do the ancient Romans appear to have been more profuse than in the expense they incurred to procure their favourite 'marbles;' and even at the present day the traveller is astonished by the incredible quantities still to be seen. It has been justly remarked that there is not a door-sole, nor a guard-stone at the corner of the meanest court in Rome, which is not of marble or of granite from some ancient edifice. The palaces and churches of modern Rome owe all their ornaments to this taste of the ancients. St Peter's presents us only with the accumulated importations of imperial Rome; for, if we except a few blocks lately brought from the Alps to restore S. Paolo fuori le mura, we are satisfied there is not a pillar or a slab to be found which was not brought to Rome betwixt the end of the Republic and the building of Constantinople—a period of betwixt 400 and 500 years.

In the year 1700 the antiquary Ficoroni personally counted the columns in Rome, and he says he found 8000 existing entire; and yet these can be but a very small proportion of what once were there. In the public buildings of London, with all its boasted luxury and splendour, we cannot at the moment remember more than four pillars worthy of the name, and they are those erected in George III. Library at the British Museum. They are of red Scotch granite, cost about £1000 each, and are very respectable pillars; but they might 'hide their diminished heads' if brought into comparison with many of those of Rome. How much wealth was expended, what human sufferings were endured, that Rome might be adorned! The quarries were the 'penal settlements' of antiquity.

Metals do not appear to have been used in building to a very great extent. The beams of the Portico of the Pantheon were of bronze, and must have been immense, as

Urban VIII., who took them down in 1632, formed of them a hundred cannon for St Angelo, besides the Baldacchino of St Peter's, perhaps in itself the ugliest object in Rome. Pegs of bronze were also used for rivetting stones together; and the numerous holes now seen in the Colosseum and other stone buildings were formed during the middle ages, in order that the 'barbarians' might extract the metal.

Some specimens of lead pipes for the conveyance of water have also been found, as one with the inscription—'II Quinteliorum Condin. et Maxm.,' found in 1829 at a villa excavated by the Duke of Bracciano, about six miles from Rome, on the Appian Way, and which was probably, from this inscription, the villa of the Quintelian brothers, whose death is so beautifully described by Gibbon.

Glass is found abundantly in small fragments, but of the coarsest description, often quite opaque, and rarely fit for the transmission of light. By the ancients it seems to have been mostly used for utensils, and as early as the time of Agrippa began to be employed for Mosaic work.*

Plaster work (intonacum) was brought to great perfection, particularly for coating the specus of aqueducts, the interior of piscinæ (reservoirs of water), and those walls of houses which were adorned by painting.

Painted plaster may be considered a certain proof of a date subsequent to the Republic. No more exquisite specimens can be seen than those in the substructions of the baths of Titus, probably remains of Nero's palace. The Sette Sale show the durability of the intonacum of a piscina, and the successive depositions upon the plaster are worthy of notice.

We cannot speak with much certainty of the materials used for paving or flooring the most ancient buildings,

* Pliny, xxxvi, 25.

though we may conjecture that what was used for the walls of the building would also be employed in the earliest periods for the flooring.

Mosaic pavement (lithostratum), formed of small fragments, was first invented in Greece, and Pliny* particularly notices a work of this sort at Pergamus, by Sosus, and a pigeon drinking, which has been conjectured by some to be that now in the Capitoline Museum. It was first introduced into Rome in the time of Sylla—'*Lithostrata* cæptavere 'jam sub Sylla, parvulis certe crustis, extatque hodie quod 'in Fortunæ Delubro Præneste fecit.'† It was called also pavimentum sectile. It was employed in public and private buildings under the emperors, and many beautiful specimens of it exist, especially in the Vatican Museum, as that from Otricoli, in the Sala Rotonda. The original white mosaic of the Temple of Juno at Gabii still remains in great part. It seems to have been formed by first placing a deep layer of strong cement, and inserting into it while wet the little pieces of marble; and when the mosaic is fine, none of the cement is seen, while in coarse mosaic it is very visible. The whole seems to have been polished down after the cement was dry, to bring it to a smooth surface. It was also done with small pebbles of various colours, called pavimentum tessilatem.‡ This was also used in ceilings.§ Heliogabalus, as already noticed, introduced the practice of paving with slabs of various coloured marbles, and this was improved by Alexander Severus, and from him has the name of Opus Alexandrinum. The pavement of the Pantheon is an example of it.

Tiles appear to have been the only covering used for roofs, and sometimes they were very large, as we read of a

* xxxvi, 25.

† Pliny, xxxvi, 25.

‡ Suet. Casar. 46.

§ Lucan, x, 114—Adams, p. 529.

garret covered by one tile,* and there was a strong temptation to make them large on some occasions when taxes were levied according to their *number*. Thus when war was declared against Antony, the senators were taxed at the rate of 4 oboli, or 10 asses, for every TILE on their houses.†

* Suet. Gram. 11. † Dio. xlvi, 31.—Adams, p. 527, R.A.

NOTE OF SPECIMENS.

Common Building Stones.

I. Travertin from Tivoli.
II. Hard Peperin from Marino—identical with Saxum Gabinum.
III. Tufo of Tarpeian Rock.
IV. Hard Peperine, from Temple of Juno Gabina.
V. Soft Peperine, from Wall of Servius Tullius, (2400 years old.)
VI. & VII. Travertin of Colosseum.
VIII. Tufo of Colosseum.

Specimens of Bricks of various ages, taken from Buildings of ascertained dates.

A Tiberius—red.
B Do. —white.
C Nero.
D Vespasian.
E & F Hadrian—Temple of Venus and Rome.
G Caracalla—red.
H Do. —white.

Ornamental Stones, Marbles, Porphyries, &c.

No. 1. Semi Santo—called a variety of Africano, but in fact a Breccia.
2. Rosso Antico.
3. Verde Antico.
4. Giallo Antico—Baths of Caracalla.
5. Alabaster—Do.
6. Alabastro di Tivoli—(Hadrian's Villa.)
7. Green Porphyry.
8. Do.
9. Red Porphyry.
10. Do.
11. Cipollino.
12. } Africano, from ruins of Carthage.
13. }
14. Rosso Antico, from Pompeii.
15. Coarse Tesselated Pavement, from Pompeii.
16. Mosaic Pavement of Temple of Juno Gabina at Gabii.
17. Fragments of Roman Glass.

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No. II.

ON CERTAIN FEATURES

OF THE

ANCIENT ARCHITECTURE OF SCOTLAND.

BY

R. W. BILLINGS, Esq., Architect,

ASSOCIATE OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

[*Read at a Meeting of the Institute at Edinburgh on 10th February* 1853.]

On considering the general subject of Ancient Scottish Architecture, I found far too much to say within the prescribed limits; the material has consequently required curtailment, and so rendered the paper rather discursive. But though this be the case, I have endeavoured to illustrate one or two points especially, so that you may have something fixed on your minds—something that you can carry away. It would be easy to give an hour or two of general talk on the subject of Scotland, but I have forborne this, and at the risk of being somewhat dry, have preferred that you should have something technical instead of something general.

Nearly eight years ago my experience of Scottish Archi-

tecture was about the amount possessed by Englishmen generally, and perhaps as much as most Scotchmen possessed, for they too knew very little about it. The result of my labours since is, that Scotchmen are as much amazed as myself at the extent of art the country is possessed of, and even yet the field is not one-half illustrated.

Some of you may probably recollect that at my lectures in Queen Street Hall some years ago, examples of tracery were exhibited. I then stated that they were all geometric, and that similar arrangements of squares were the foundations of the whole of them. The centres round which the tracery is formed are all on the lines of the squares; and what I wish you now to bear in mind is, that the windows themselves partake of this formation, although they have not their squares entire. Selections from these examples formerly exhibited are now before you; though not Scottish they are near to it; they belong to Carlisle, but you may easily suppose that the style of art adopted there would soon be carried to Scotland. In fact it was so; and long before the wars broke out between these two countries, they were friends in arts as well as in arms. Window Tracery is a field of art especially interesting to Scotchmen; the specimens we have in this country have neither the uniformity of those in the south, nor their beautiful regularity of geometric formation; but though their form is not so regular, yet the very peculiarities of Scottish examples are so many proofs—so many links in the chain of geometric art. Their peculiarities form really a valuable mass of material for illustrating the foundations of early art. The smallest tracery panel has its laws of composition; the smallest window has its laws as well as the largest cathedral, and these laws are all geometric. That which governs the general composition is very nearly akin to the law of detail, and this is the real secret

of the success of ancient architects, and indeed of ancient artists of all kinds. The ancient architects were undoubtedly artists, and very clever artists too, for we never find their works fail. Their buildings were always adapted to the sites. In illustration of this, look at any of their buildings, and see not only how beautifully they are composed, but how wonderfully they harmonize with the surrounding scenery. In churches, the spire crowns the valley, giving contrast by its long perpendicular line to the low undulating lines of flat country. Now, the greater number of ancient Scottish churches have unfortunately disappeared, and therefore we have not evidence so much in Scotland as in England of this peculiarity; but close on the border it exists. Take the county of Durham for instance,—that portion of England once the greatest ally of Scotland. There the country is exposed and hilly, and through the whole district there are none but stunted towers, with two remarkable exceptions. These are Darlington and Chester-le-Street, where there are two remarkably tall spires; but they stand in quiet valleys, where the wind seldom reaches them. On the hills, where, in all probability, the wind would blow a spire down, the ancients took care never to put one up. The only exception which I know to this, is the one which all travellers going to London by the east line will see. It is in an exposed position at Boldon, in the county of Durham, after passing Newcastle. But the stunted spire is placed there, not for elegance of composition, but as a land-mark.

On looking at old buildings, one cannot help thinking that the designer has invariably placed the point of effect exactly in the right place, and that in no other position would the same effect have been obtained. We feel that there are certain laws for the amalgamation of scenery and building which should be observed. The ancients invariably

placed their porticos on heights, and they succeeded. Where do we find a temple like the Parthenon in a hollow? We, on the contrary, delight to hide our candles under bushels. We place our porticos in hollows, or if a portico of similar design to those we place in valleys does get by accident to a hill top, we never finish it. The laws of composition with reference to the formation of ground must be attended to. We have a very illustrious precedent for attending to the laws of composition in the case of the foundation of Cawdor Castle. At Cawdor, it seems there were a number of amateurs about Macbeth's time, who resolved to build a castle there, but could not agree about the site. It was at length determined that they should place the money that was to build the castle in a chest, that the chest should be put on a cart, that a donkey should drag it, and that where the donkey stopped the castle was to be founded. Well, the ass planted it in the very best position that could have been fixed upon. But we must not give the ass the credit of choice, for it happened to run the cart against a thorn tree and upset it. The stem of this thorn tree and the chest are still preserved in the cells of the castle.

The Scotch have always been taken for an economical nation; but they sometimes carried this feeling of economy into most extravagant architectural faults. In general, however, they carried their decoration only so far as it was absolutely necessary. Take one of the pinnacles of Roslin Chapel for instance. There are three sides in sight, and these, as you know, are richly carved. The crockets are beautifully finished; and not only that, but the face of the pinnacle itself is a perfect net-work of elaborate detail. Go to the back (the fourth side), and you will find that where you cannot see it, it is as plain as possible. The same thing occurs at Melrose Abbey. Economy was the order of the

day wherever nothing could be seen. They carried their decoration only so far as it seemed absolutely necessary, but not one jot further. The English never seem to have carried the same feeling into their works ; for, in sight or out of sight, the work is generally finished in the same way.

Perhaps no nation in the world ever made so much use of simple materials as the Scotch, or have changed so little in the course of ages the staple of their ornamentation. This is a very remarkable feature in the Architecture of Scotland, and marks it from every other nation on the face of the earth. Now, for instance, if we look to the use of the bead moulding, you will find, beginning at the columns of the Abbey in Dunfermline, and taking the decoration of windows through all times, down to the era in which you have no architecture (the reigns of George III. and George IV.), that this was the staple of all the ornamentation of the country. Then look at the fine effect on some of the most elaborate buildings in the country by the mere use of the chamfer. The great window in the west front of Dunblane Cathedral illustrates this in a remarkable manner. In many English windows there is a shower of small mouldings ; but here is economy combined with elegance, and a breadth of effect which is the very life of the composition. The west window at Brechin has it even in a still more remarkable degree, because in the window itself the simple mullion does not go through the tracery, which has three stages of simple chamfer mouldings. It is a flamboyant window, without the intricate mouldings of that style. Another peculiar feature of economy we see in the old castles. When Scotland had done defending its castles with the fire of cannon, the gunholes which perforated these battlements were changed in use, but not in form. They were changed to the use of the opposite element—they were made into water-spouts. The

battlements themselves shared the same fate, and were treated even more ignominiously; for when they had done service, they were literally turned upside down for ornament, showing that their occupation was gone.

Many of the Aberdeenshire castles and houses are most singular in their staircases. These are nearly all circular, and similar in design, though some are elaborated more than others. There is an example at Fyvie which is particularly remarkable, being perhaps the largest circular staircase in Britain. You know that the step of a stair is generally a single stone passing from the newel to the wall, the newel being a sort of continuous column up the centre of the stair. But in the case of Fyvie stair, you might drive a coach and four up it, and the steps are so long as to necessitate a series of triangular vaultings for their support. In Forfarshire, (except the largest, which is in Glammis Castle) the stairs are nearly all parallelograms in plan, while their decorations are totally different from the circular staircases. We frequently find a rope moulding placed as a horizontal decoration in Scotch buildings. At Crichton there is a wonderful specimen of it. Now, we can all understand the use of a horizontal cable moulding in binding a building together as it were. At Careston, in Forfarshire, the rope moulding is used vertically instead of horizontally, so that the staircase has the appearance of being suspended by it. This staircase is perhaps the most peculiar in the district. It has some very interesting armorial bearings, and the plastered ceilings are wonderfully rich. Independent of this, however, Careston has a most charming point of interest to the lovers of the horrible. By a hole at the head of the stair a shot may be fired at the back of any one ascending. This ingenious device for putting a person out of the way quietly is wonderfully varied all over Scotland. There is one of the kind in a little old

tower close to Cramond House, said to have been part of Bishop Gavin's mansion, where the person entering the house suddenly found himself in a little square chamber, into which a weight could be quietly dropped to crush him.

We must not look to the old baronial architecture of Scotland with a view to mere enrichment; it is not there that the modern architect will gain the most useful and important lessons. We must look on these old houses as compositions where detail is quite out of the question. [Mr Billings here sketched the general form of baronial buildings before the turret came into use, and said that all his researches tended to the opinion that the open turret was introduced into Scotland as early as in France. He next gave a sketch with a turret, and said]—The specimen I have given you is Meggernie, in Glenlyon. It is a huge tower, and agrees wonderfully with the landscape, and I will be bound to say the decorations did not cost £5. Many of these buildings are necessarily plain. They are commonly built of the dark red sandstone of the country—a material in which intricate detail and small mouldings would be utterly lost, and where masses of light and shade are alone effective. Where the stone is light, as in the houses of Edinburgh and Glasgow, every bit of decoration tells; but in dark stone it is altogether different. There is often a very great charm in a plain wall, as there often is a great charm in a plain person.

We all know the changing features of Scottish buildings—their immense variety. I can hardly tell you my astonishment upon being told everywhere during the course of my work that all turrets were alike. The fact is, that every one of these turrets has some peculiar feature, and their variety is perfectly endless. Sometimes a very large turret looks well on a small building. You all know that circular turrets on very large castles certainly appear to be very small ob-

jects; but there are many small Scotch houses in existence where turrets of the same size are used, and with great effect. It would be easy to run over a whole catalogue of the latter; but particular mention may be made of the gardener's house at Edzell, near Brechin, and some very capital examples along the line of coast by Prestonpans. It is a curious fact that in the old Scottish architecture the turrets do not diminish with the size of the building. As a consequence of this mode we find that in the smaller buildings, instead of being merely secondary features, they become the very essence of the composition. [Mr Billings illustrated this by sketching Glammis Castle and one of the houses in Prestonpans, to shew the different effect of the turret in large and small buildings.] In most of the great buildings where they are small features they had conical caps, whose points, ranging about the same height as the roof gable, rendered the line of composition frequently parallel. But in the smaller buildings the turrets as often ranged with the sloping line of the crow-stepped gable, and formed a totally different class of design.

Another very distinguishing feature of Scottish Architecture is the jutting lines breaking all over the building. And in attempting to analyse the design, you can hardly tell whether the perpendicular or horizontal line of composition prevails. These lines are often exceedingly picturesque, and are to be found wherever we get a building on an irregular site. Like the bead moulding and the chamfer, they are common to all periods, and the baronial mansion took it from ecclesiastical buildings. You may see an early specimen of these economic decorations at the nunnery of Iona. There is a play of line about them, and an artistic effect, which there is no mistaking. Again, at Dryburgh, which is rather more recent than Iona, there is a capital illustration of the design

suiting itself to the rising of the ground entirely by means of broken lines. The old Scottish buildings seem really to take root into the soil. Where Nature made inequalities, the architect always adapted his building to them, and made it unmistakeably part and parcel of the landscape. Another great feature in old Scottish architecture, which, I am sorry to say, is disappearing very fast, is in the angular sectional lines of the old Scottish streets, by which more sunlight, and much better ventilation are secured, than by buildings of later date. There are still some streets or houses of the description in Greenock, Aberdeen, and Stirling. The lines of the roofs of these houses are long and sloping, so that the sun shines even into the ground story of the north side ; while the more modern houses are so high, and the roofs so nearly horizontal, that the sun scarcely ever reaches the lower storeys of the north side, and the two rows of houses form a sort of funnel. In these respects the old Scottish towns are intensely interesting to the lovers of sanitary measures.

The house architecture in many towns in Scotland is especially worthy of careful notice and illustration. Though they are not what may be termed first-class subjects for illustration, yet the old spirit of Scottish Architecture is embodied in them. In the city in which we are assembled, as well as in the old towns on the coast of Fife, and also in Dundee, Aberdeen, and other places, there are many old houses full of architectural interest, added to their great historical importance. Whether these buildings are large, like the Castle of Glammis, or small like the smallest detached towers, they have all some distinguishing feature, some original point deserving of notice. Thus, if we take the staircase at Glammis, you will find in it a very useful as well as interesting feature. Those who have seen it will recollect that the newel is hollow from the top to the bottom, and that at every floor there is a door-way. One might think

it was for the purpose of thrusting any one through it to the bottom, but it is no such thing; for although it is now used for clock weights, its original purpose was for drawing up water to the different storeys. Such an arrangement, I think, might be suitably adapted to modern dwelling houses, for the carrying up of coals, &c. to the different landings.

In the smallest Scottish building as well as in the largest there is generally some peculiar feature. I need not tell you what interest attaches to Craigievar. Over the door there is the family shield, with dogs quartered on it, and the inscription, 'DO NOT VAKEN SLEIPING DOGS.' So that it has a double meaning,—it is a warning to all 'reivers and land-'loupers,' and it is the motto of the laird as well. At the mill at Stewarton, near Ayr, there is as characteristic a piece of Scotch as I know. Under the granary door, by which the corn is forked into the mill, there is the family shield, with an inscription over it, 'NAE MILL, NAE MELE.' The similarity of the words makes a capital architectural decoration. There is under it the date 1707, and beneath is the characteristic scroll, 'OVER, FORK OVER,' which tells the labourer to fork the sheaves into the mill, while it is at the sametime the motto of the proprietor's armorial bearings.

Nothing can be more remarkable in the irregularity of their plans than the old Scottish churches. They are, so far as churches can be changed, as varied as castles, and all of them depend on the ground for the distribution of their parts. While Melrose Abbey is nearly all nave, Kelso Abbey is nearly all choir, (though the latter peculiarity has given rise to the idea that at Kelso, as at York and Lincoln, there must have been originally a double transept.) Elgin Cathedral has five divisions, while Melrose Abbey has but four; some have three, and some only two, while some are without divisions. And in the Tweed buildings in particular, it is not

only in the plans of the churches that the architects seem to have scorned uniformity, but even in the very details. In the clerestory of Dryburgh Abbey, one arch in a compartment is two feet below the others, for no reason that I can perceive, but that the architect had a contempt for symmetry. Another most interesting class of buildings throughout Scotland is the double-roofed buildings. I do not mean a timber roof over a groined ceiling, but a double-groined ceiling—a double stone roof. Lincluden and New Abbey are of this class, and there are several others. This is a common feature in baronial buildings as well as ecclesiastical. In churches, the places between the two roofs were frequently the belfries; in baronial buildings they were, strange to say, the kitchens.

The designs of Scottish buildings, as in England, are, I think, clearly traceable to bodies of men working in particular localities, for the work of the different designers may be traced perfectly clearly. The same may be said of the plaster work, for almost the same hand or style may be traced at Wintoun, Glammis, Craigievar, and other buildings in Aberdeen and Forfarshire. It is a curious fact that all the plaster ornaments in these are from the same moulds, the same decorations being used in the panels as in the ceilings. Respecting Craigievar there is a rather curious published criticism, that it is 'like 'a man in a strait waistcoat.' Had it been a gentleman's assertion, he deserved to be taken to task for it; but as it is a lady's —and a clever lady's too—I shall say nothing, excepting to express my belief that there is not an architect in the room who would not gladly acknowledge being the tailor.

While Scotland has made use of many of the lighter features of the architecture of other countries, she has throughout maintained the stern and simple features of her own. Look at Linlithgow Palace. At the entrance you see heavy massive fortified architecture: the moment you get inside you find

the playful. There is to be found some of the most elaborate niche-work in that Palace, and it is a great pity to see it falling into decay for want of a few pounds to roof it in.

I have spoken of the unchanging form of Scottish architecture, and now direct your attention to the arch, the changes in which are a curious feature in the architecture of all countries excepting Scotland. But here you find the circular arch common to all periods, whether in Malcolm's kitchen at Dunfermline, or in some of the common gateways in Edinburgh, built late in the seventeenth century. This is one of the things that very much puzzle amateurs in trying to define Scottish architecture.

[Mr Billings went on to exhibit several sketches of church windows. He showed that in numerous instances there existed a great similarity between church windows and house windows. Coming from the simpler elements to the more complex, he exhibited a sketch of the great window at Dunkeld Cathedral, which, he said, was almost a *fac simile* of the window at Linlithgow. Nothing remained of the decorations of the former window now but the stumps of the stones; but study and calculation would enable them to restore the whole window, as Cuvier, from fossil vertebrae, had been enabled to restore the whole animal. Mr Billings then described the west window of Brechin Cathedral, and called attention to the simplicity of its mouldings. He next adverted to the decorations above the windows at Heriot's Hospital, every one of which was of a different design, and was a work of art in itself. For the most part they had been designed by men deeply versed in their art, and showed a union of mechanical with artistic ability.]

There is a mistaken notion about Scottish buildings that their windows were small, and this notion has done more to prevent the revival of old baronial architecture than one

would readily imagine. Because there have been small windows in some castles, this is held as a general argument against them. Society has totally changed since then, and they do not now want the windows of old keeps. But are these the real features of our baronial architecture? They certainly are not of the architecture of from 1500 to 1660. Most of us know Crichton Castle. There the windows are enormous, and in fact much larger than those we put in houses now. They have heavy iron gratings over them, and all that is required to adapt them to the present day is simply to remove the prison-looking bars, which are now no longer useful, and certainly not ornamental.

No. III.

ON THE DRAINAGE OF EDINBURGH.

BY

ALFRED LANCEFIELD, Esq., C.E.

[*Read at a Meeting of the Institute in Edinburgh on 13th January 1853.*]

From the extraordinary capabilities of Edinburgh for drainage, it is astonishing to find that at present many streets are undrained. During the last Lord Provost's rule much was done for the city, the most important measure, in a sanitary point of view, being the removal of the old and the erection of the new slaughter-houses. The present Chief Magistrate has shewn himself anxiously alive to the importance of drainage and sanitary matters generally; and as improvement is making rapid progress in all directions, we may hope that the condition of the drainage of Edinburgh will now meet with the consideration to which it is entitled; so that fever and all its attendant evils may be banished from our dwellings, and provision made for the future health and comfort of the inhabitants. Any attempt to arrest the progress of disease

must, in the present state of a part at least of the sewers both of the Old and New Towns, but especially the Old, prove of little avail, as many of these sewers are rather generators of pestilence than purifiers of the city, as they ought to be. But with the experience of past years—of the year 1848 for example, when the Royal Infirmary Reports show that 4263 patients were admitted on account of fever alone—with this before our eyes, and the probability that the cholera may again visit us, let us hope that such comprehensive improvements may now be made as will render this city in a few years as remarkable for its health and cleanliness as it is already distinguished for its beauty, its educational establishments, and the high reputation of its men of genius and learning.

From what I have observed during the time I have been engaged on the Drainage Survey, I am inclined to believe that some of the former inhabitants of the city, considering a drain—*when they made one*—an inconvenient, but *perhaps* rather a necessary expense, constructed it in the cheapest possible manner, its bottom being, I may say almost invariably, formed of small 'causeway stones,' improved afterwards, in some few instances, by running pitch into the interstices, to prevent the liquid matter flowing in the drain washing the soil from under these stones, and in that way destroying the drain ;* while others, more liberal, or probably more enlightened on the subject, made them more in accordance with our modern notions of a good drain. In no other way can I account for the numerous deficiencies in the present system (if system it can be called) of the drainage of Edinburgh.

In the following paper I propose to describe the courses

* Much damage has nevertheless frequently occurred from this action of the fluid matter, as in Dundas Street, Howe Street, &c.

of the main lines of sewers (and by a main line I must be understood to mean a large drain commencing at a certain point, and going by the most direct line to its point of discharge), their general declivities and sizes, their junctions, peculiarities, and defects, with a few remarks on drainage generally as carried out in Edinburgh, Liverpool, and London.

Edinburgh forms no exception to the general rule that by the inhabitants in former times advantage has been taken of such natural streams (or rather, as they are now used, natural sewers) as the land afforded, without artificial aid; we therefore find that the streams in the immediate neighbourhood of Edinburgh form the outlets of the built sewers of the city. Some difference of opinion, I believe, exists as to the actually prejudicial effect of such open canals for sewerage; but as I understand that fever always shows itself first in the neighbourhood of such streams, and in localities where, as in the West Port and King's Stables, the drain passes open under the floors of the houses, only covered in some instances by open flag stones, I think there can remain little doubt on any one's mind that the sooner such a state of things is amended, the better will it be for the health of the people. The Edinburgh Fever Board, in 1839, reported 'that the 'ravages of fever have been gradually increasing of late 'years; that they have recently been much extended, and 'that its malignity has very greatly increased; that the epi-'demic which has prevailed in Edinburgh during the last 'two years must have affected at least 10,000 of the popula-'tion of the city, and that, while such has been the history 'of epidemic fever in Edinburgh during the last twenty 'years, it is to be observed, on the other hand, that in '*in almost every great town in England it has been gra-'dually decreasing; in none of them has it been during that*

'time a formidable epidemic, and in several of them is 'almost unknown.'

The main sewers of the town I shall class according to their lengths. The first great sewer is that which commences at St Cuthbert's Lane, passes through the West Church Burying-Ground, West and East Princes Street Gardens, Green Market, North Back of Canongate, Abbey Hill, crosses the end of the Palace Gardens, and enters an open ditch in the market garden east of Croft-an-Righ, to which point from its commencement its length is 8600 feet. This drain afterwards joins the foul burn near Meadowbank.

The second main sewer commences at the west end of the stables on the south west side of George Square, and taking its course along the north side of the east division of the Meadows, through Clerk Street, Rankeillor Street, and Hercles Street, falls into the Holyrood Park sewer, continuing its course through the property of Clock Mill House or Belleville, and joining the first main sewer at Meadowbank, its total length to the open sewer at Clock Mill House being 7980 feet.

The third main sewer, known as the 'Cowgate Sewer,' commences at the head of Victoria Street, running along the Cowgate and South Back of Canongate, and falling into an open ditch at the foot of Dumbiedykes at Granny's Green; from thence it joins the Holyrood Park drain, which was formerly part and parcel of the Foul Burn, of fetid memory, and was covered up by the formation of the Queen's Drive, under the superintendence of the late Mr William Nixon of Her Majesty's Board of Works here. The total length of this drain to its junction with the Park drain, including the open ditch, is 4980 feet.

The fourth sewer receives nearly the whole drainage of the New Town. It commences at the back of the houses on the east side of Dundas Street, passes along East Northum-

berland Street and Nelson Street, crosses Drummond Place, flows thence down Duncan Street, through the meadow opposite the Royal Crescent, and finally discharges itself into the Water of Leith, at Canonmills, its total length being about 3000 feet.

I have prepared a sketch to shew the various secondary sewers connected with this trunk line, to which I shall afterwards more particularly call your attention.*

The fifth main sewer is that commencing at St James' Square, which takes its way along Little King Street, crossing Greenside Street under the house No. 19, and continuing its tortuous course through Queen's Place, Greenside Row and Court, under the east end of Blenheim Place to Windsor Street; from thence crossing Brunswick Street it enters an open ditch about the middle of the north side of the Lover's Lane; its length to this point is 3960 feet.

These may be considered as the whole of the trunk sewers of the town, their total length being rather more than four miles and three quarters.

I shall now briefly describe the sketch of the secondary sewers entering the fourth trunk sewer. It was chiefly prepared to show the marvellous want of method in their laying out, and the same absence of design is apparent in every part of the town. Look for example at the group marked A B C D E, where the drains verge to every point of the compass. To render this necessary a most remarkable contour of country must be supposed; but this does not exist here. It will be seen at the points marked F and G that the drains have a summit level, running in two directions. In these two instances there is no adequate reason, I think, to be found; and they can only be accounted for, because the subject, at the time the drains were constructed, was deemed one of very

* Plate xxiii.

little consequence. A hole had to be made to convey away the liquid refuse of the streets or lands, and the cheapest and readiest means of so doing were adopted, as already noticed, without considering in which direction the sewage was discharged. At H a curious twist occurs with no apparent object. I believe any one who will take the trouble to study the sketch will admit the justice of my remark, that the drains have been made without any regular arrangement or design, but solely to suit the views of the various parties as they built their houses ; hence the summit levels in the drains.

The other sewers which I shall now mention I must for want of a better name call 'District Sewers.' They are five in number, the first commencing at Gardner's Crescent and ending at Dalry Burn, which receives the drainage of Atholl Crescent and Place, Dewar Place, Torphichen Street, West Maitland Street, Grove Street, and Morrison Street.

The second, commencing at the east end of Shandwick Place, and ending at an old quarry near Bell's Mills, receives the drainage of Stafford Street, Coates Crescent, Alva Street, William Street, Charlotte Place, Melville Street, Walker Street, and Manor Place.

The third, commencing at Randolph Cliff and ending at Stockbridge, receives the drainage of Randolph Crescent, Great Stuart Street, Ainslie Place, Moray Place, Forres Street, Darnaway Street, Doune Terrace, Church Street, and Kerr Street.

The fourth district sewer has two points of discharge, one at Stockbridge and the other opposite Danube Street, draining in its course Carlton Street, St Bernard's Crescent, Bedford Street, Danube Street, and Ann Street. As the summit level of this drain lies between Nos. 20 and 42, the sewage matter runs north opposite No. 20, and opposite No. 42 it runs south.

The fifth, or Newington drain, commences at Arniston

Place, and taking in drains from Blacket Place and Newington Road, crosses Hamilton Place, and finally discharges itself into the Pow Burn.*

I have heard that the old ladies of a certain ancient city in the kingdom of Fife, when a company was first formed for the introduction of water to that city, complained grievously to the promoters of the measure that the water they now got was tasteless. Perhaps it may be a reason why the water of the Pow Burn is used by many at the present day, that the whole sewage of Newington is discharged into it.

I believe I have now described all the main levels of sewage throughout the city. I shall therefore proceed to give a general view of their average rates of declivity.

The St Cuthbert's Lane Drain at present commences at the West Church Poor House; but I have recently prepared plans for a part of it, enlarging and extending it to the west end of the lane, commencing at Tobago Place; having for the first 400 feet an average declivity of 1 in 17, and for the remainder of the new drain a declivity of 1 in 60, thus bringing it to the point where it joins the old drain at the north end of the Royal Military Academy. From thence to the west end of the West Princes Street Gardens, an average declivity is presented of 1 in 56; to the east end of the Gardens 1 in 124; through the Mound 1 in 240; to the North Back of Canongate 1 in 126; and to its point of discharge 1 in 105, giving an average declivity on its whole length of 1 in 88.

The second or 'Meadow Drain,' taking it from its commencement to the foot of Carnegie Street, has an average inclination of 1 in 280.4; from thence to the foot of Brown Street 1 in 16½ and to its junction with the Park Sewer 1 in

* I ought perhaps to add a sixth, the 'Inverleith drain.' It commences near Golden Acre, and drains Inverleith Row and Place; but considering it rather as a private sewer, I have omitted it in the general description.

13.7 ; thus an average inclination of 1 in 49 might have been obtained for this drain, and the whole of the Meadows and Fingal Place been properly drained, had the projectors taken the trouble to ascertain the level of the irrigated meadows in the Queen's Park. To this drain I shall again have occasion to draw your attention.

As the third, or Cowgate sewer, has been already minutely described by Mr Smith,* I need only mention the rate of inclination of the old sewer, into which the Cowgate sewer has been led ; from the east end of the South Back of Canongate to its junction with the Park Sewer, the inclination is 1 in 30.

The fourth, or Duncan Street Sewer, has an average rate of inclination of 1 in 19½ to the centre of the meadow opposite the Royal Crescent ; the remainder, to its termination, 1 in 80.

The fifth, or St James' Square Drain from its commencement to the end of Little King Street, has an inclination of 1 in 20.7 ; for the remainder, an inclination of 1 in 21.

Having now finished these dry details of heights, distances, and gradients, I beg to direct your attention to the forms, sizes, peculiarities, and defects belonging generally to the draining of this city. The form that has been almost invariably adopted is that with straight sides ; slightly curved sole, generally about 3 inches ; the top segmental ; the versed sine of the arch averaging from 5 inches (in a drain 3 feet in width) to 20 inches. The soles of these drains are most commonly formed of causeway stones, very few indeed having pavement soles ; but I shall describe the sizes of a drain from its commencement to its termination.

The drawing, then, to which I now direct your attention is a plan and section of the drain of the Royal Exchange.†

* See Transactions, vol. ii. page 157.

† Plate xxii.

You will observe that it commences exactly under the line of the front of the shops facing the Royal Exchange. Many of you may have remarked, on entering the quadrangle of the Exchange, a small grating about 5 yards from the inner side of the archway. This grating is about 9 inches or a foot square, and along with the stone in which it is placed, is very slightly raised above the surface of the surrounding pavement. I am thus particular in describing it, that no doubt may remain in your minds as to the evident intention of this grating. It is for the ventilation of the drain ; and I think I may venture to say is unique in Edinburgh. The drains, with this exception, are wholly unventilated; indeed so charged are many of them with foul air that the lanterns which my men made use of in exploring the drains were repeatedly extinguished. But to return to the description of the drain of the Royal Exchange. The size of the main drain is,—total height, 5 feet 11 inches ; to the spring of the arch, 4 feet 8 inches ; width, 3 feet. It will also be seen that there are from the commencement of this drain to the back wall of the Exchange no less than eight branch drains ; the first on the east being 117 feet in length, and extending as far as Craig's Close ; both the southmost branches to the east and west have smaller drains leading from gratings at the sides of the square for carrying off the surface water, thus rendering it perfectly certain that the grating first alluded to is for ventilation only. Another peculiarity observable in this drain is, that it is provided with a side entrance. I know of only one other drain having a side entrance in Edinburgh, and that is in Hay Street, Nicolson Square. Both these side entrances are defective, inasmuch as there is above ground no appearance of their existence, each of them being nearly 18 inches beneath the surface. The side entrance in Hay Street is only an 'eye' misplaced, being about 2 feet square, and 3 feet from the

main drain. The side entrance of the Exchange Drain is much better; it is 4 feet 1½ inch by 3 feet 11 inches, as shown in the enlarged plan and section. I must now draw your attention to the fact, that neither the ventilating shaft nor side entrance are mentioned in the specification for building the Exchange, that document being expressed as follows: —'And as to the drains expressed on the plan of the founda-
' tions, extending 60 feet beyond the back front, such shall
' be 4½ feet high to the spring of the arch, which shall rise
' 1 foot, and shall be 3 feet wide within, and the side walls
' of the drains shall be 2½ feet thick, and the arch shall be
' of good rubble stone, and the bottom paved with strong
' flag-stones, lapping over one another 4 inches at least, and
' let 6 inches into the wall on each side; and there shall be
' carried up proper conveyances through the several walls of
' the building to the kitchens and water-closets of the dif-
' ferent houses for discharging the foul water from them into
' the drains, and for admitting pipes of clean water for the
' service and conveniency thereof; and these conveyances
' shall be properly inclosed so as to keep them from being
' noxious to the shops below, and yet so as easy access may
' be got to the pipes to rectify them when necessary; and
' that eight proper funnels shall be made up from the drains
' for conveying away the rain-water from the roof of the said
' buildings, and from the area of the court, with eight iron
' grates and eight sink stones, the iron grates to be 2 feet
' square, each composed of bars 1 inch square, and at 1 inch
' distance from each other, with hinges, and locked down with
' a screw, to prevent stones or rubbish from getting in that
' might in any ways obstruct the passage.' By this extract it will be observed that the drain is contracted for only '60 feet
' beyond the back front.' This may account for the extraordinary diminution of size which then commences. Immediately

at the end of the stated 60 feet the drain is suddenly contracted to 2 feet 4 inches in height by 1 foot 9 inches in width; and again, under the footpath at the north of the Exchange back green, its size is only 1 foot 10 inches by 1 foot three inches; crossing the wall and entering Allan's Court for a distance of 26 feet 9 inches, it expands to 5 feet 5 inches in height by 1 foot 6 inches in width, again contracting to 1 foot 6 inches square, and finally entering the drain in Market Street, contracted again in size to 1 foot 6 inches in height by 12 inches in width. The drain which it now enters, by a step of 1 foot 10 inches, is 3 feet in height by 1 foot 7 inches in breadth, and carries off the water from several of the closes in the High Street, finally entering the St Cuthbert's drain at the Green Market. The size of this drain, as soon as it crosses the wall of the railway depôt, is, straight side, 3 feet 2 inches; width, 2 feet 6 inches; versed sine of arch, 1 foot 2 inches; versed sine of sole, 3 inches; thus making a total height of 4 feet 7 inches. Of this sudden contraction or throttling of the drains, there are several instances in Edinburgh. Thus, the drain from Charlotte Square, at the south end of Wemyss Place, opposite No. 5, has a total height of 7 feet, and a width of 3 feet 3 inches; opposite No. 9 it decreases to 4 feet 2 inches in height by 3 feet 3 inches wide; opposite No. 11 it still further decreases in size, being only 2 feet 3 inches high by 2 feet 1 inch wide. Near the middle of Church Lane it again enlarges, being 2 feet 8 inches in height by 2 feet wide; a little farther on it again decreases to 2 feet 4 inches in height by 2 feet 1 inch in width; again to enlarge at the north end of the lane to 3 feet 2 inches by 2 feet 5 inches. This portion of the drain, for a distance of 22 feet, has the sides supported by wooden bars 2½ inches in diameter. In Gloucester Place the drain again enlarges to 4 feet 4 inches in height by 2 feet 5 inches in width. From this point it progressively

enlarges till, at the west end of Cumberland Street, its size is 6 feet 2 inches in height by 3 feet 3 inches in width.

Another instance occurs in the Meadow Drain. At the east end of Rankeillor Street this drain is 6 feet 1 inch in height, by 2 feet 5 inches in width. At Holyrood Street (south end) it is 4 feet 8 inches in height, by 2 feet 4 inches in width, enlarging at Carnegie Street to 5 feet in height, by 2 feet 2 inches in width, again enlarging at the end of Brown Street to 7 feet 10 inches in height, by 2 feet 7 inches in width. Opposite the end of Salisbury Street the drain is abruptly contracted to 2 feet 8 inches in height, by 2 feet 2 inches in width, gradually enlarging at its junction with the Park Drain to 3 feet 1 inch in height, by 2 feet 1 inch in width.

The junctions of nearly all the drains are at right angles. The evil of this mode of junction may, I think, be sufficiently shown by the fact that, assuming a mean velocity of 4.12 feet per second in a drain 2 feet 6 inches wide, the following ratios of resistance will be found :—

For a curved junction of 20 feet radius, resistance 100
For a curved junction of 5 feet radius, resistance.. 146
For a junction at right angles the resistance is.... 316 ! !

Some of the junctions are slightly curved, but not sufficiently so. Science teaches us that the best junction is that which avoids eddies, as they produce deposits ; therefore, by bringing sewers into each other by curves, *tangent to the direction of both*, by which no eddies will be made, deposits will be avoided, and the efficiency of the sewer secured, as far as junction is concerned. The junction at right angles is not the worst. At the point B, Plate xxiii, it will be observed that the junction is by a *curve* certainly ; but as the curve is *against* the run of a collateral sewer, it has choked it up.

I think only two instances of this description of junction occur in Edinburgh. The demi-trident junction, Plate xxii. is unique in Edinburgh; it occurs at the junction of Ainslie Place, with the eastern division of Great Stuart Street. The length of the right-angled part of the junction is 6 feet.* At the side of the sections I have shown a few of the *forms* of the main drains; their great dissimilarities may be very easily observed—witness Nos. 1 to 6; yet each must have had its advocate, otherwise it never would have been built. But I believe there is now no doubt that the egg-shaped drain is the best. To prove this, take for example three sewers, one egg-shaped, one with straight sides and curved bottom, and another with a flat bottom—the sectional area of sewage being assumed as equal to 1·25 square feet. The friction on the egg-shaped sewer will be 100; on the curved bottom it will be 115, and on the flat bottom 124; thus showing the very decided advantage the egg-shaped sewer possesses over the others. It has also this important advantage for a sewer, exclusive of its superior strength, that when the sewage matter is small in quantity, the narrowness of its bottom gives it a greater hydraulic depth, and therefore, increased velocity is obtained for the sewage, and when the quantity is increased, greater space is obtained for its transmission in the broader part of the sewer. Its superiority in point of strength is so self-evident that it needs only to be mentioned to be acknowledged.

I have already slightly alluded to the entire want of venti-

* A junction something similar to this occurs at the end of Scotland Street, and may be seen at the bottom of the left hand corner of Plate xxiii; but as this is a Railway Company *improvement*, and not as the drain was constructed originally, it must not be counted among the faults of the 'system;' but it does show the necessity of the drains being large enough to allow them to be inspected personally at stated intervals, that such damage to the drainage as is here shown to have been committed (and this is not the only instance) by the operations of private individuals or Railway Companies, may be prevented by the timely interference of the proper authorities.

lation in the sewers of Edinburgh, with the exception of the Royal Exchange Drain, before described. This absence of ventilation is a crying evil, and I think, if attention were given to the subject, it would be found that, in many instances, the noxious gases generated in the sewers are introduced into our houses by the insufficient trapping of the drains leading from the houses to the main sewer, thus causing ill-health, fever, disease, and death, the occasion of which might, perhaps erroneously, have been attributed to other causes. Another defect is that the 'eyes' of the drains are generally about 15 inches or 2 feet beneath the surface, their positions being rarely indicated by any mark above ground. Charlotte Square, Torphichen Street, and one or two other places are certainly exceptions, but they are few in number. This renders them very difficult to find, and in searching for them in the sewers they are dangerous, as they are always charged with gas, from there being no outlet from them to the upper air. I may here mention that last year two of my labourers entered a drain in the New Town, and one of them having incautiously held his lantern within the mouth of the eye, an explosion instantly took place, which dashed the lantern out of his hand, severely scorching him. The other man was slightly scorched, and escaped by throwing himself flat in the drain.

On going to London in 1851 I made it part of my business to inquire into the mode of working some of the large drains there constructing by the Commissioners of Sewers; and through the kindness of Mr Gibson, their engineer, I was enabled to inspect several of them internally. Their mode of ventilation is by carrying small shafts from the crown of the arch at various points in the drain to the surface of the road, these shafts being near the middle of the road, and covered by a small grating. To my question, 'Is not this mode of venti-' lation objectionable?' It was replied that no complaints had

been made on the subject, as, from the shafts being in the centre of the road, any offensive smells were dissipated before they reached the houses. I think, however, an improvement might be made on this arrangement, as, although it may not actually be offensive, yet it must to some extent vitiate the air around these ventilating shafts.

An enormity about the city of Edinburgh is, that the *cabinets d'aisance* are at present not connected with the sewage system, as they most evidently ought to be. If this were done they might be rendered comparatively '*inodores*,' and not be, as many of them are now, public nuisances. I am sure any one who has recently passed Warriston Brae, near the Waverley Bridge, will fully coincide with me in opinion. I trust public attention may shortly be called to this matter, and means adopted for rendering these places less offensive.

In London the sewers are of enormous size, and large sums are annually expended in constructing new ones, which are also of considerable dimensions. One of the sewers through which I passed was about 10 feet in height by 6 in width. In Liverpool from the 1st of January 1847 to 31st December 1850, no less than 29,948 yards, or rather more than 17 miles of sewers, have been constructed, involving an outlay of £40,919 : 17 : 7 sterling; but here if a new drain is constructed it is formed of a clay pipe of from 4 to 18 inches in diameter!!! However admirable these pipe-drains may be, and undoubtedly are, for house drainage, they are wholly inapplicable as main drains, except in some remarkable instance, where little more would pass into them than from a house; and even then they must be used with extreme caution. Any one wishing to see the effect of a pipe as a main drain may look at St Mary's Wynd, and read the recent report by the Paving Board on 'Surface Drainage.'

All main drains should be of such size as to admit a

person into them to inspect them, which inspection should be made periodically. They should have side entrances, that the public roadway may not be disturbed when it is necessary to enter them, as well as to save the expense caused by taking up and relaying the causeway; and when, as frequently occurs, a new drain is to be joined to any main sewer, it should be done under the inspection of some competent public authority, as in many instances I have found that where the side of a drain has been slapped through for the introduction of a branch sewer, the stones have been left in the old drain, by which a considerable deposit has of course been caused.

Having now given a slight sketch of the drainage of this city, on which, to give anything like an ample account, a volume might be written, and pointed out a few of its most glaring defects, as beacons to be avoided, let me express a hope that a better state of things may be before us; that energetic measures may be adopted for rectifying the most important of these defects, and causing properly built main sewers to be constructed, with all the modern improvements of easy access and perfect ventilation; and also that the streams round the town may cease to be made the outlets of our sewage system. Now that a means has been discovered by Mr Stotherd of deodorizing sewage instantaneously, why might not the sewage of the city be turned to profitable account? *

* Since writing the above, I have received a letter from Mr Stotherd, in which he informs me that the deodorants he uses are also good fertilizers, thus rendering his discovery doubly valuable.

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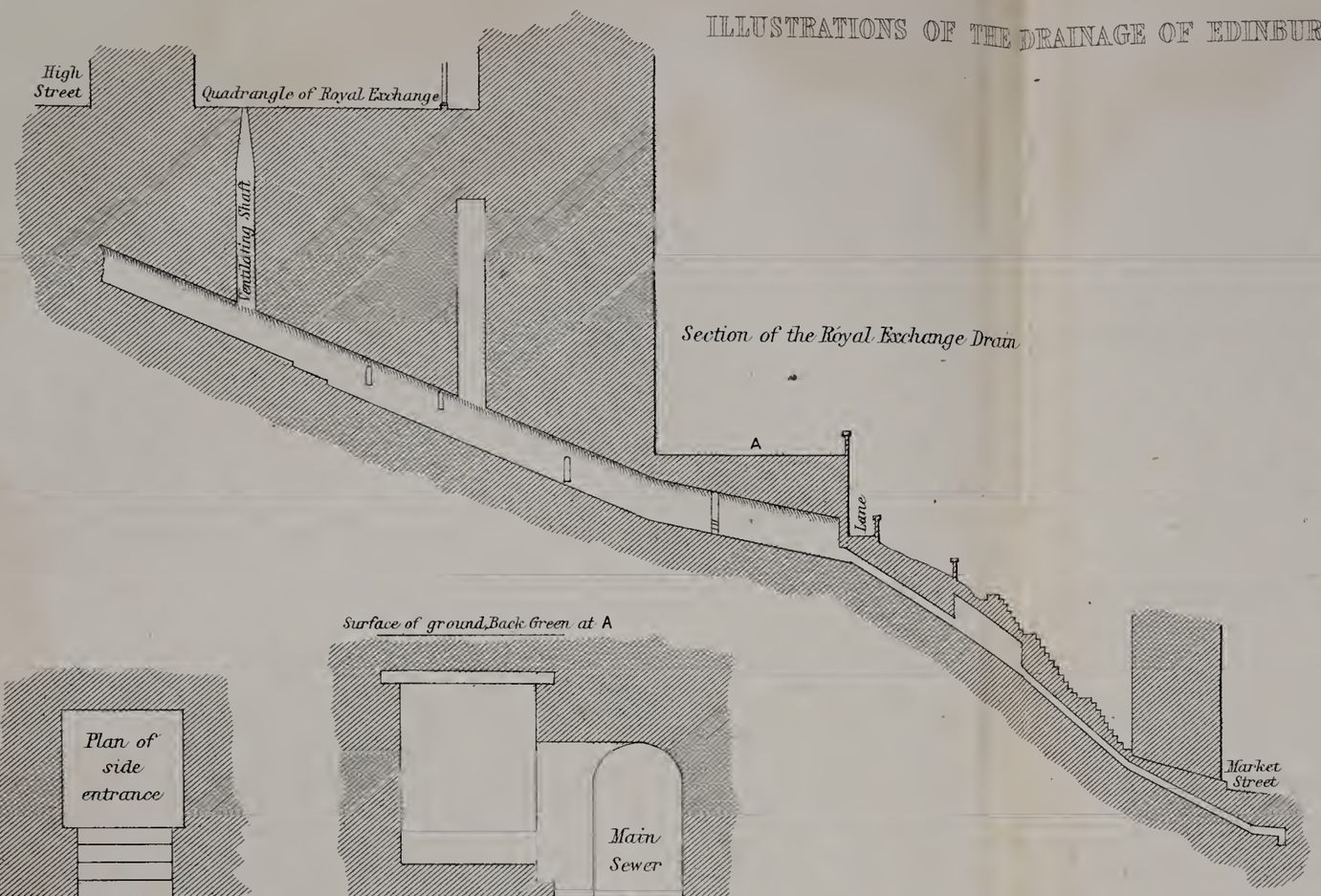
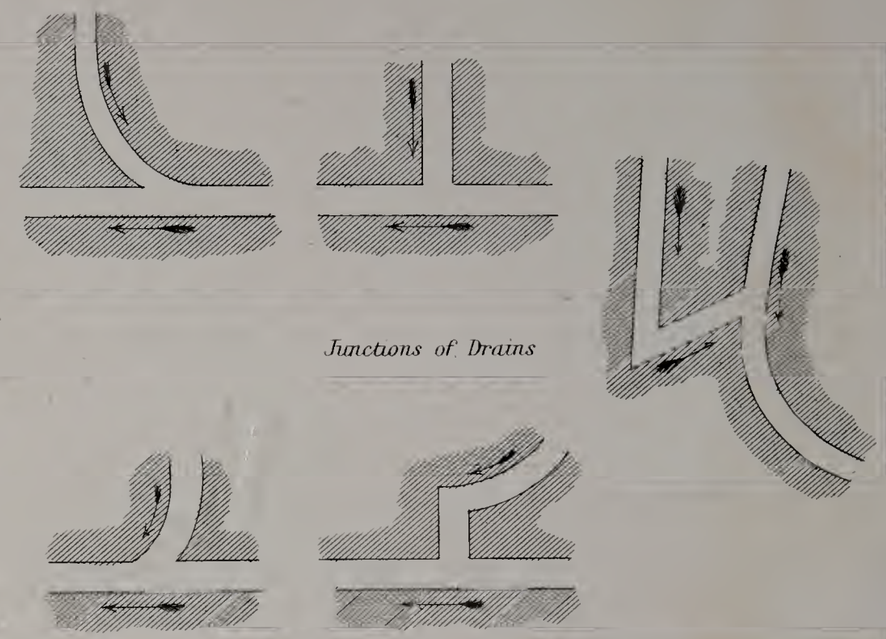
ILLUSTRATIONS OF THE DRAINAGE OF EDINBURGH.

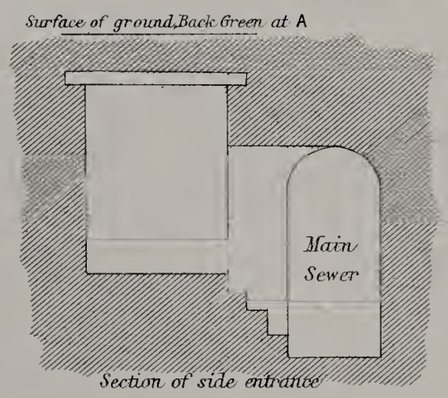


Section of the Royal Exchange Drain

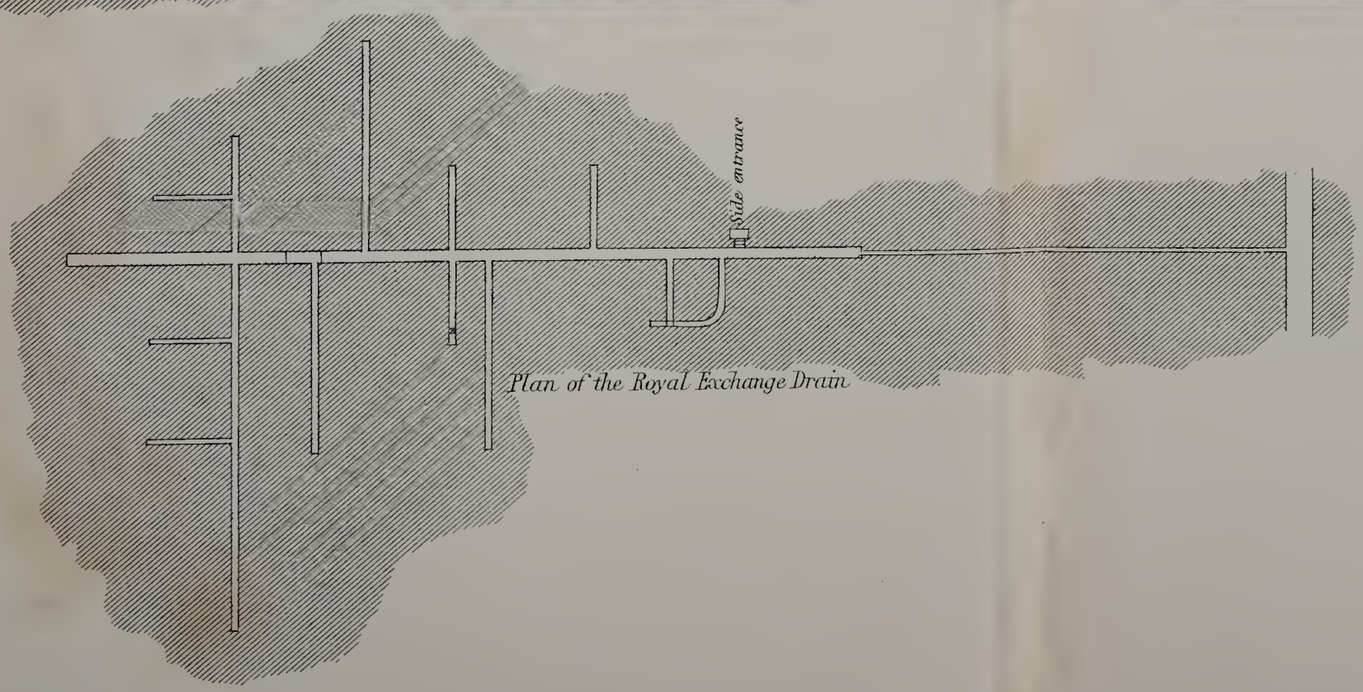


Junctions of Drains

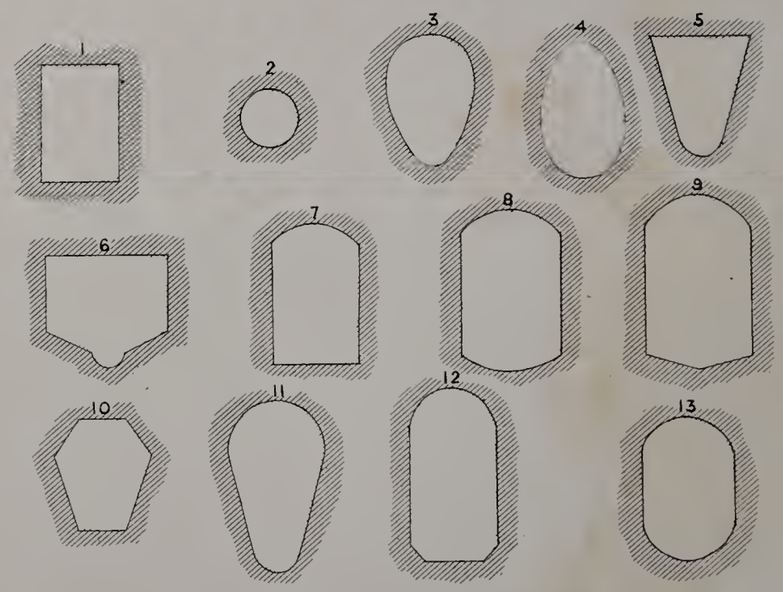
Main Sewer



Section of side entrance



Plan of the Royal Exchange Drain



Forms of Drains

Alfred Lancefield C.E. Delin.

W. & A.K. Johnston. Sc. Edin.

ILLUSTRATIONS OF THE DRAINAGE OF EDINBURGH.

The termination of the Main Drain A, B* is not given, it is shewn as far as the meadow opposite the Royal Crescent.*

Alfred Lancefield, C.E. Delin.

Transactions of the Architectural Institute of Scotland,
Session 1853–54.

No. IV.

ON THE ADAPTATION OF PREVIOUS STYLES OF ARCHITECTURE TO OUR PRESENT WANTS.

BY

ALEXANDER CHRISTIE, Esq., A.R.S.A.

Director of the School of Design, Edinburgh.

Nearly half a century ago, when a chapel was to be built in the Old Town by a congregation of Seceders, the clergyman, to the horror of his elders, selected a Gothic design for the proposed erection: they thought nothing less than that their worthy pastor was on the high road to Rome; and they remonstrated against his choice with great fervour. "My brethren," was the worthy Doctor's reply, "there are only two styles of architecture between which you must choose — the Gothic and the Greek: the Gothic, it is true, was used by Roman Catholics, but they at least were Christians — the Greeks were rank Pagans."

This was clever, but like most clever sayings, it only told a part of the truth. The question thus raised, and so

decided by these Edinburgh worthies, has since that time been raised again, and again answered on similar grounds, with much plausible ingenuity, by a late Roman Catholic architect; and his opinions have been echoed with more or less ability by so many men, with so many aims, that I venture to think it may be worth while, in an Institute like this, formed and supported by the lovers of architecture, for the encouragement of each other in the search for the true and the beautiful, to devote some little attention to the consideration of how far previous styles are adapted to our present wants, and under what conditions we may so apply them.

But we are met at the very threshold of this investigation by the question, often querulously and pertinaciously put, "Why adopt any previous style whatever—why not invent a new one?" Why should we, who boast increased intelligence and comforts, be housed in imitation of our benighted ancestors? You might as well insist on our wearing their cast-off clothes, their ruffs and farthingales, their bag-wigs, swords, and hair powder. The answer to all this is very simple. We do not require any new style of building. Did our necessities call for such a change, the circumstances would create it—the demand would infallibly produce the supply, as it has done hitherto. No style whatever has sprung into life at once, *totus teres atque rotundus.* No man is known as the inventor of a style of architecture. Who invented Stonehenge?—the Pyramid?—the Arch?—the Pointed Arch?

Styles go by the names of nations, not of individuals. Antiquaries delight to trace, how in some overlooked examples of an ancient style, the first germs of the new method displayed themselves, long before they outgrew and supplanted the manner in which they had been nursed into

strength. The Eutruscan arch is found in the granaries of Egypt, as a piece of hidden construction, ages before it became the feature of a style. The architrave is dispensed with in the ornamental arcades of Roman sarcophagi long before the days of Spalatro and Ravenna; and it was slowly and by degrees that the pointed arch stole, Jacob-like, the birthright and the blessing of the Christian world, from the sturdier Esau of the Romanesque.

Nor, after all, has the architectural invention of the present time been wholly dormant. Of the three great principles of architectural construction, the Beam, the Arch, and the Tie, we have added to the second, and we may fairly claim the third. A stray skew arch or two may be found in old Gothic buildings (I think there is one at Oxford); but it was only when the rigid railways required rivers and roads to be bridged over at all angles, that its power and convenience caused it to rise into importance.

From the earliest times, among the most savage tribes, bridges of ropes, borrowed perhaps from the spider's web, may have shadowed forth the principle of tension. Scamozzi hinted at it in 1615; and a century ago, a suspension bridge was built near Durham over a chasm of 60 feet, "2 feet wide, with a hand-rail on one side, and planted in such a manner that the traveller experiences all the tremulous motion of the chains;" but it was not till after Telford's experiments on the strength of iron, that these bridges called into play the invention of the architect. In these fairy-like structures, Scotland led the way, at Galashiels, Peebles, Dryburgh, Kelso, Montrose, and the pier at Trinity, and so on till we come to the colossal work of Telford at the Menai Straits, which again has to bear a rival in the Tubular Bridge of Fairbairn and Stephenson. The roofs of our numerous railway stations show

admirable adaptations of this principle to the covering of large spaces where lightness of construction is required; while the Crystal Palace, transplanted from Hyde Park to Sydenham, rivalling in extent the mightiest structures in stone and lime, will, it is to be hoped, long endure for the delight and instruction of mankind, in spite of *airy* objections, and theological but illogical argumentation, a grand monument of what British skill and enterprise can achieve, when a special and worthy purpose calls for the exercise of inventive power or constructive ability.

Nor must we forget those dingy proofs of our manufacturing energy — our factory chimneys. We are too much accustomed to connect them with the disagreeable concomitant, their deadly smoke; we are apt to overlook the beauty of their tapering line, and their faultless construction, enabling their slender stalks to brave unharmed the wildest winds that rush through our inclement skies. A nation and an age which can produce such works as I have now enumerated, need hardly fear the imputation of want of architectural invention; and it is from no dearth of the power of design that we have no new style, but simply because what we already possess is amply sufficient for all our requirements.

But with all our eclecticism and rage for imitation, our architecture is not without a distinctive character of its own. Future ages will be as able to point out by unmistakeable evidence, buildings which belong to the first half of this century, as we can tell the buildings of the time of Anne and the first Georges. No age can form a correct judgment of their own achievements in any department of intellect; but I fear we shall not greatly err, if we say, that we shall be known more for a groping after what is good than for the value of the treasure we have housed; one thing we may be

sure of, that (though we may not see it now) our character is as completely stamped, and will be as clearly read by posterity on our buildings, as we now read the refinement of Greece in her ruined temples, or the strange civilization of China in her fantastic pagodas.

In examining the different styles with a view to their adaptation to our present wants, we at once reject the earlier and ruder styles, such as the Assyrian, Egyptian, Hindu, and Mexican, from their ponderous, and the Chinese from its fantastic character. Modern buildings, in these styles, may be put up to attract attention, like the Egyptian Museum in Piccadilly, or to gratify a fancy, like the pagoda at Kew; but they are manifestly unsuited to our habits and climate. They were fitted for a period now bygone, never to return in the cycles of civilization; they are like the creations of the early dramatists — inexplicable, without learned notes, when the circumstances of the hour which gave them birth had passed away, and with which we have no feelings in common. These be humours—let them pass.

We, living, here in what was once the Ultima Thule, must confine our attention to those styles which have had their growth or development in Europe, where their principles have been educed, and their details elaborated, because they are either the children of our creation, like the Gothic, or of our adoption like the Saracenic—*all of them sprang from our wants.* A distinction is often taken as to our wants, which is superficial and damaging. We talk of necessaries and luxuries, and we boast with Spartan virtue of building nothing but what is strictly useful, and wasting no money on superfluities; but what is luxury to one class makes the *res angusta domi* to another, and *vice versa.* Some of you may remember the hero of one of Mr. Warren's

novels, who is reduced to the distressing penury of a thousand or two a-year, and has to submit to the degradation of a post-chaise, instead of the private carriage, which to him was a necessary of existence. More of you will remember the circumstance of distress which occurred to Tom Jones on his way to the masquerade, "a circumstance which," Fielding says, "will appear very ridiculous to many of my readers. This was, how to procure a shilling; but if such readers will reflect a little on what they have themselves felt from the want of a thousand pounds, or perhaps of ten, or twenty, to execute a favourite scheme, they will have a perfect idea of what Mr. Jones felt on this occasion." The boundary between luxury and necessity varies constantly with the point of view of the observer; like the line of the horizon, it ever rises and falls to the level of his eye. Let us for one moment ask how many of the necessaries of to-day were amongst the luxuries of past generations; or is any one prepared to prophesy how many of the luxuries of to-day may not be considered as indispensable by our descendants—who will in their time invent new luxuries, and pity our forlorn condition that we knew them not. Who will now dispense with water-pipes conveying health and comfort through our dwellings?—how many are prepared to return from the gas in our streets to the dull twinkle of the dirty oil?—nay, do we not look forward to a more brilliant illumination likely to be afforded to us by the electric light or some future kindred discovery?—who will give up in Britain, our carpeted floors and return to rushes and sweet hay? do not our model lodging-houses (which I consider as so many protests in favour of my principle), contain more comforts, more of the appliances to enable men to enjoy their existence than could be boasted of by many a proud noble of the middle ages? and yet how

little is there which is not considered by their promoters as perfectly necessary for the absolute health, to say nothing of the social and moral improvement of the people. But the list is endless and I trust needless—let us *luxuriate* then; let us increase our wants, that the ingenuity of man may be taxed, and our population fed by satisfying them, increasing our comfort, health, wealth, and power—increments which, in the history of the Christian world, have been ever accompanied by the extension of knowledge, civilization, morality, and religion.

The styles then which we are to lay under contribution, for our wants may be classed under the three heads, of Greek, Roman, and Gothic.

These heads will admit of all the others which have taken root in Europe, being marshalled under them in a manner sufficiently clear for our present purpose. I wish you to dismiss all subdivisions for the present — all Romanesque, Byzantine, Provençal, Norman, and Saxon, and Arabesque; they all partake of the circle; and the first horse-shoe arch is in the Pantheon at Rome; they may then be called Roman, while all pointed architecture, from the tall lancet to the flat Tudor, we shall class under the well-known name of Gothic.

And first, Greek by itself. Greek—so simple in its construction, that it has been held to have arisen from timber construction—from one beam laid straight across two uprights. A word or two, by the by, on this derivation. The truth of this origin is somewhat doubtful. What do we know of timber buildings? *This*—that in savage countries the form is that of a pyramid or hut, covered in earlier cases by twigs and leaves, and in a more advanced stage by camel hair coverings, tightened by ropes into the shape of a tent. From the hut may be derived in this

fanciful way the Egyptian pyramid—from the tent, the leading lines of the Egyptian temple.

In the wood constructions of the middle ages, we have one story projecting above another. Whether it be in our High Street of Edinburgh, or the narrow lanes of Grand Cairo—this will hardly give us the Grecian temple. The huts found in Lycia may have been quite as much in imitation of Grecian temples as the temples in imitation of them. Again, set a wrecked boat upon its stern, as you may often see in the vicinity of a fishing village, and you have the pointed arch; but you might as well derive the arches of the Pantheon—not the present fane, but the old Republican Giant before Agrippa's portico was set in front of it—you might as well derive the arches of the Pantheon, or the Cloaca Maxima, from the Tub of Diogenes half-buried in the mud. But no one thinks of doing either the one or the other. These imaginary analogies are most unsafe guides.

James I. could find no better employment for Inigo Jones than to set him to guess who built Stonehenge; and poor Inigo, as the shortest way out of the mess, fathered the structure upon the Greeks. An echo of this idea has been caught up by Mr. Pugin, who mixes it up with the wooden theory, and masking his artillery behind both these sand bags, opens his fire upon the Greek architecture. He says the Greeks erected their columns like the uprights of Stonehenge, just so far apart, that the blocks laid on them would not break by their own weight. In the paragraph immediately preceding, he had abused the Greeks for not departing from wooden construction, which he calls the most ancient and barbarous that can be imagined—the term barbarous has since been transferred from the supposed type to the architecture itself. The Greek architecture *barbarous!*

— an architecture whose delicately-calculated curves have required the utmost skill and scientific resources of accomplished architects of the present day to discover and display.* Barbarous! an architecture, not a line of which, from Stylobate to Acroteria, but was the result of the most fastidious thought, the object of the most careful study. Barbarous!! an architecture so calculated, that from the dimensions of a triglyph, you can restore the proportions of the whole order, as certainly as Professor Owen can give you the outline and habits of an animal from the cast in sand of its claws, or the inspection of a fossil tooth. I speak now of the Doric, the simplest, and therefore, according to these authorities, the most barbarous. Barbarous!—a style, the ornament of which is so balanced in its detail that not a part can be taken away without making a void that is instantly felt, nor a piece added or altered in its place without creating annoyance. It will not do to count the number of lions' heads set as ornaments round a building, and from that condemn the structure. Repetition is sometimes an element of beauty. Who condemns the beauty of a woman's mouth because her teeth are faultlessly regular, and she has a goodly number of them? they are a source of beauty and

* When the Bavarian architects first set to work to replace the fallen stones of the Parthenon (a building so barbarously constructed, that neither time, nor Turk, nor gunpowder, has been able to destroy it utterly), the drums of the pillars (the *scamilli impares* of Vitruvius) were placed, pillar by pillar, according to their diameters, but it was soon found that the pillars so set up were deformed, and I think the attempt was for a while abandoned. Subsequent study showed that every pillar obeyed a general law, a sister-like dissimilarity, *qualis decet esse sororum* — the pillars at the angles being the stoutest, and each differing in a measured ratio, which determined the drum for every pillar.

a proof of health. Remember what Milizia says about the counting of the modillions in the pediment of the Pantheon. At the top there is a double modillion; and on one side of the sloping cornice twenty-four modillions, on the other twenty-two. "Bravo," says the Italian, "to him who has counted them; but piu bravo to him who contemns such microscopic criticism." No, it will not do to attack a principle, and for proof to take refuge in cavilling at a small detail. Barbarous—What is the meaning of the word? It is a Greek word. Johnson says it means, in English, first, stranger to civility—savage—uncivilized. What, in the name of all that is fitting, can we understand by the Greek architecture—the architecture of a cultivated people to whom we owe much of our civilization, whose language is still used by all enlightened nations in their scientific and philosophic nomenclature—being a stranger to civility, or uncivilized, I cannot tell. Savage, then? Is the Greek architecture savage? Stonehenge is savage, if you will; for it is the erection of mere physical force, and it tells of horrid sacrifices, better left untold; and if on some Greek temples sacrificial instruments are found as emblems, telling of animals offered to the gods, the same tale of sacrifice must be told of the Hebrew temple. Will such criticism venture to call that savage? But the second meaning gives us more hope of a key—it is ignorant, unacquainted with arts. Indeed; if this be the meaning intended to be applied to such architecture, I ask you, is it worth a moment's serious denial? Such an assertion is a rank absurdity. But there is yet one more interpretation—cruel, inhuman. What, cruel!—tell me what inhuman idea can be excited in the brain of any man by the contemplation of a Greek building? Is a column cruel, or an entablature inhuman? Well might Hume say—"We are

apt to call *barbarous* whatever departs widely from our own taste and apprehension; but soon find the epithet of reproach retorted on us, and the highest arrogance and self-conceit is at last startled on observing an equal assurance on all sides, and scruples amidst such a contest of sentiment to pronounce positively in its own favour." I do not envy the mental constitution that can find the Greek architecture barbarous. No, it is not barbarous — it is studied — deeply studied, refined, admirably adapted to its ends — it is most symmetrical; and in its full perfection, when the Panathenaic procession wended its peaceful way through the propylæa of the Acropolis of Athens, or when the great temple of Demeter first flashed upon the sight of eager worshippers, as they poured into the Thriasian plains around Eleusis from the mystic gap in the Icarian Hills, or when the glittering fane of Zeus unfolded its wonders at the Olympian games — in this its highest grandeur, it must indeed have been most lovely to behold. In all those three great temples, from all that has been handed down to us, from the massive columns to the tenderest ornament, all was consistent. What workmanship they devoted to the greater gods was the best, the most perfect, the purest of its kind; there the grotesque never entered. Never do we hear of ribald jests in stone, sculptured in the inner cell of Zeus, Demeter, or Athena. Can we say as much for the stalls of choirs in Christian churches? Superstitious — idolatrous — mistaken — we can demonstrate their pagan worship to have been: but do not we Protestants think that the rearers of far other fanes than these, professing a religion of higher, nobler, far more mystical and wondrous principles, than the wisest pagan ever dreamed — do we not think that they were superstitious idolaters, and mistaken? We do.

But what argument is that against their architecture? None whatever. Does superstition speak from Triglyph and Metope, and remain silent on Niche and Finial? While I am as far from denying the great influence that architecture has upon the mind, as the influence that mind has on architecture, it has, I doubt, been somewhat overrated. Does the Free Church Marquis of Breadalbane live for half the year in dread of the loss of his Protestant principles, because his mansion in Park Lane boasts not the Gothic glories of Taymouth? Who fears the backsliding of Lord John Russell, because he reposes from the cares of state in the Duke's classic villa of Roseneath? Does Dr. Grant dread contamination from the Corinthian columns of St. Mary's, or Dr. Muir tremble lest he be converted into the Flamen Dialis by the mysterious influence of those tremendous scrolls that guard the entrance to St. Stephen's stairs. These are men of observation and intellect — of different forms of faith — of some small standing in the world; but I will venture to say, that no such *perverse* ideas were ever suggested to them for a moment by the architecture which surrounds them in their daily avocations.

But this unfortunate Greek architecture has another fault more intelligible, and, of course, if true, more fatal than the first — it is said to be unfit for our purposes. Now this is an objection which takes the question at once out of the region of fancy, and we can fairly grapple with a matter of fact. It is held that the style is so severe, that it will not accommodate itself to the shapes, and heights, and breadths, that are now required. I venture to doubt that this is the case. Let me not be misunderstood. I do not stand up for the universal application of the Greek, or the universal application of any style what-

ever. We should be Catholic in our tastes, and feel thankful that we can find not only something, but a great deal, to admire in all styles however faulty. We should ever remember, that there is a soul of goodness even in things evil — let us endeavour to find that out — depend upon it, we shall be no losers by the search.

That a Greek temple, such as the Parthenon or the Temple of Theseus, cannot, or rather has not been twisted successfully into an Exchange or a Church, is no reason why the classic orders, Doric, Ionic, and Corinthian, should be at once and for ever discarded from modern use. Though Greek art requires a certain symmetry of form, it never demands symmetry of plan. Is there in any group of modern buildings more irregularity of plan, less symmetry of situation, more varied form, or more successful splendour than is to be found in the Acropolis of Athens? * We are only now becoming acquainted with the true principles of Greek architecture, as we are indeed of Gothic; and if want of success were any safe criterion for the rejection of a style, alas for the Gothic! it would be banished from the land.

The greatest difficulty, with regard to the Greek, seems to me to be in the fenestral arrangements, and in the provision for the chimneys. Andrew Fairservice's notion of a "kirk wi' a chimley in't," which he prescribed as the best for Francis Osbaldistone, was unknown to the Greeks, as it was unnecessary; but be it remembered, that architecture is a fine art, not an exact science. It is perilous to prophesy that any thing is impossible. A man of genius arises and

* The plates illustrating the Acropolis of Athens have been taken, with some slight modifications and additions, from Mr. Penrose's beautiful drawings, published by the Dilletanti Society.

performs the feat. The great work is accomplished, and the prophecy is consigned to the limbo of vanities. The builders of the Treasury at Mycenæ doubtless thought their vault perfection; but the dome of the Pantheon dwarfed it and made it poor. If we have more to do with stone and lime than had the Greeks, we have also more appliances, and a more extended science to help us to our ends —our increased skill in the manufacture of glass, and the daily knowledge we are gaining of the principles of ventilation, and the management and consumption of our smoke, may yet go far to render Greek forms as plastic in our hands as Romanesque or Gothic. Other points to be noticed crowd upon me, but we must to fresh fields and pastures new.

Now then for the children of the Greeks, for all the other styles have sprung from them. The Romans had no art, and pretended not to it. They conquered Greek art, yoked it to the arch, and making it do their bidding, the gorgeous and magnificent style which we know by the name of Roman was produced. This change was most important, as the starting-point of all the other styles. We have in it an element too much neglected by Protestant church builders—I mean the use of the polygonal or circular building for our places of public worship. Our religion has ceased to be processional, and the long drawn aisles with their attendant naves and transepts are no longer required; what is wanted is a place where all may hear and see, so that they may unite without difficulty in the sung and spoken prayers, and thanksgivings, and hear perfectly the words of exhortation addressed to them by the preacher—to this, in Episcopalian churches, is to be added a distinct place for the communion table. All these, I think, are to be found more readily in the circle, or

any of the regular polygons, than in any other form; and they are hallowed to us as having been used in the earliest ages of our faith as baptisteries. That they are capable of possessing great architectural beauty, the Baptistery of Pisa is a witness for the Christian builders; and the elegance of the circular temple is allowed by all who allow any thing to classic architecture.

The objection of unfitness alleged against the parent Greek comes with diminished force against her Roman progeny. The introduction of the arch increases the power of covering in large spaces, and the pitch of the roof, necessarily increased not only by the climate but by the style, renders it more easy of execution among us.

If the objection of unfitness is weakened as against the Roman, it is still more so against the Revival. Is it necessary to defend the works of Bramante, of Raphael, and of Michael Angelo and others, which have been called all manner of ill names, because some lackadaisical virtues were placed round the tomb of a Venetian, who had no title to such empty honour. Misleading epitaphs are not confined to the Renaissance — do sculptured angels never pray or wave the censer in gothic tombs but round immaculate bishops or true-hearted laymen? Alas! our poor frail human nature has flattered the dead in all styles and through all ages. Even on the grave of Nero an unseen hand was found to scatter flowers. Is there not truly a soul of goodness in things evil? Besides, we should remember the difficulty of getting at Historic truth, and that reputations have been as successfully and unjustly vilified in print as ever they were falsely eulogized in stone.

Some purists in taste have a most mistaken prejudice in favour of uniformity; but this uniformity is death to the picturesque. The Greeks felt this, and placed even their

most symmetrical buildings asymmetrically to each other. No temple was approached but at an angle, so that the side as well as the front might be taken in by the eye, and full justice rendered to the composition. A straight street is not the best adapted for effect, as Nuremberg, and Bruges, and Venice, and Paris, will tell you at once. Your own High Street is nearly straight, but not perfectly so; and the slope from the Castle to Holyrood gives an additional picturesque element, which it would have wanted on a plain. If you are compelled to build a straight street, you must vary the elevation of your buildings. You need not go far for an illustration. Go to the door of this Institute, and look towards the east, and you will see the lines of the houses varied and picturesque, and a spire only on one side: turn the other way, and you find two starved straight lines, without projections to give shadow, or variety to please the eye. These lines are repeated by windows without mouldings, till the sides look like a foreshortened chess-board. Mark, I don't think it would much mend the matter to arch the windows. It is the sameness that offends, and the starved look. In some of our streets the Greek pediments have been sadly abused in the attempt to give variety; and another expedient has been hit upon; but it is most clumsy and unfortunate. It is called the storm window. Such openings in the roof have been practised everywhere, but nowhere with such successful ugliness as in our own romantic town. Balustrades along the lower ledge of the roof have been decried by a school of criticism which is fond of quoting Scripture in support of its assertions. Such critics have forgot the text in Deuteronomy, "When thou buildest a new house, then thou shalt make a *battlement for thy roof*, that thou bring not blood upon thine house, if any man fall from

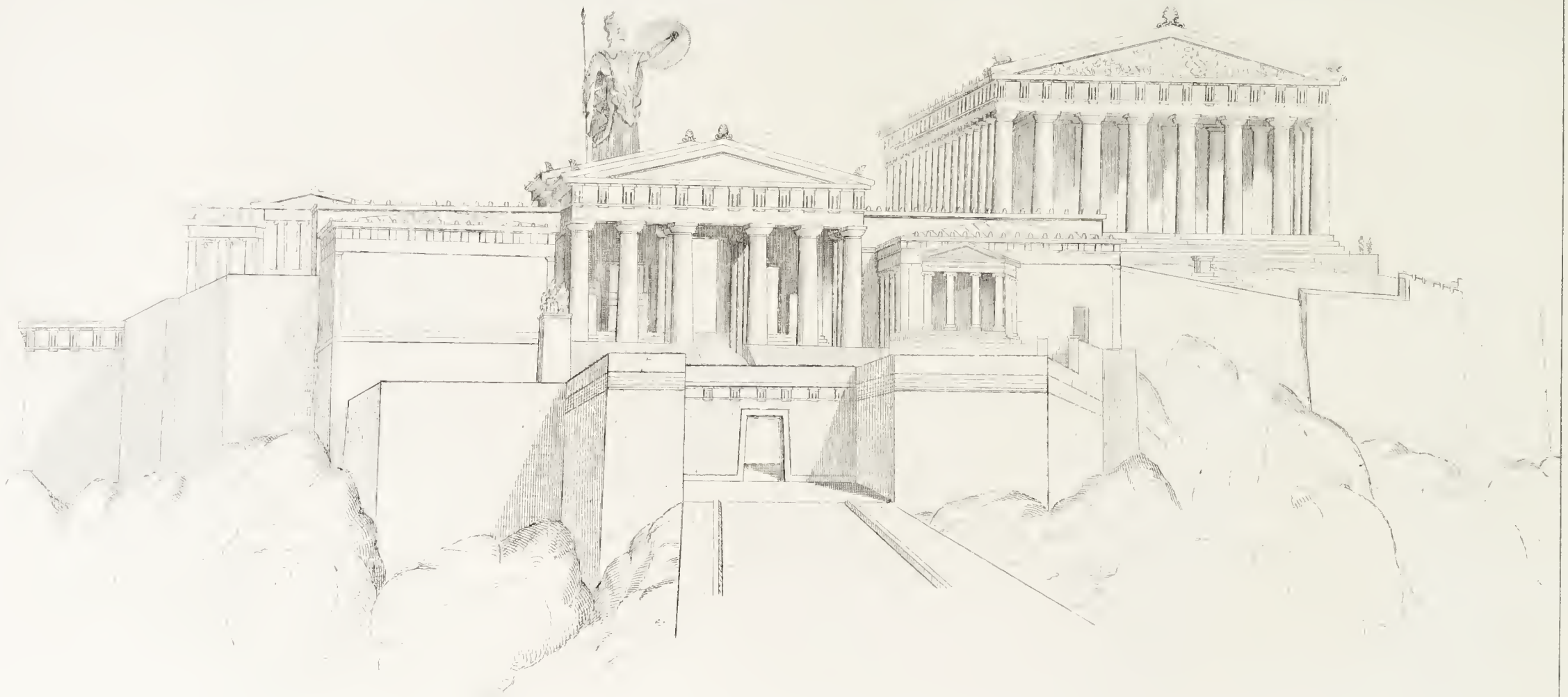
thence." It would almost seem as if that text had caused the introduction of the battlement as a feature in civil architecture. I believe it was unknown in the classic, but is to be found in every phase of the Christian architecture. The necessity of variety leads to another disputed point. We are often told that a group of buildings must be of one style. Why? Because a contrary practice would produce incongruity. Not necessarily. The skill and genius of the architect will be shown in preventing that. No rule is so comprehensive that it will measure all cases. I can understand how in Venice and Nuremberg there is a rule, that if any old building be taken down, it shall be rebuilt exactly as it was before, and that no new building shall appear without being approved of as appropriate by the constituted authorities. Venice and Nuremberg are monuments of the past, and should be kept as near as possible to their old glory, for the instruction and delight of men; but that, in a city such as our New Town, where historical associations have hardly begun to be connected with the buildings, and the prevailing style is the Nondescript, we should be denied the erection of any fine composition, because it is not of the same style as one which happens to have been set up next door, is what I cannot understand. We are, as I said before, eclectic more than inventive in our architecture; and so long as it is kept within due bounds, I can see nothing but good and gain arising from a tasteful variety. In the High Street, the case is widely different; and the casing of the Parliament House, containing a hall which has an historical interest, and indisputably marks the period of its erection, ought to have been made to correspond with the principal interior feature. I cannot help thinking, that in this case, a grand opportunity for adding a most picturesque feature to our town was not only lost but abused.

The mistakes and errors which have been committed in the adaptation of Romanesque and Gothic, have arisen from exactly the same causes which have injured our attempts at classic architecture, namely — either too slavish an imitation of one particular model, or an improper selection of the model to be imitated; often from both causes combined; and the fault in all cases has been fully as much in the want of sufficient knowledge in the employer as of deficiency of skill and invention in the architect. Our architects and artists are educated — our lay members are not. Few have the leisure or the opportunity to work out an art education for themselves; and work it for themselves they must, if they mean to do it at all. Our university possesses a professorship of music, but there is no chair for painting, sculpture, or architecture.

That there is no want of a desire to be well informed on such subjects, the success of this Institute is a convincing proof. What can bring together members so different in their station and pursuits, but the desire for information on subjects in which they are deeply interested, which cannot be supplied elsewhere, and which, they feel confident, they will obtain from free communication with the professional members. Let us aid each other then, to the utmost of our power — let our studies and our sympathies be large and extended — let us not call all that is beyond the range of one particular style, however good, *base, unnatural, unfruitful, unenjoyable, and impious.* Let us not allow any magician, however subtle may be the charm of his incantation, or wondrous the treasures of his cabalistic lore, to "cast the glamour ower us," confine us within a circle of his drawing, and make us dread to pass his mystic and dogmatic line, lest some classic lion should tear us limb from limb, or the demons of the Renaissance should put in peril our

immortal souls. No; such masters of their art may find "sermons in stones" — earnest and eloquent sermons too; but I fear they lack that higher alchemy, whose pride and boast it is to find "good in every thing."

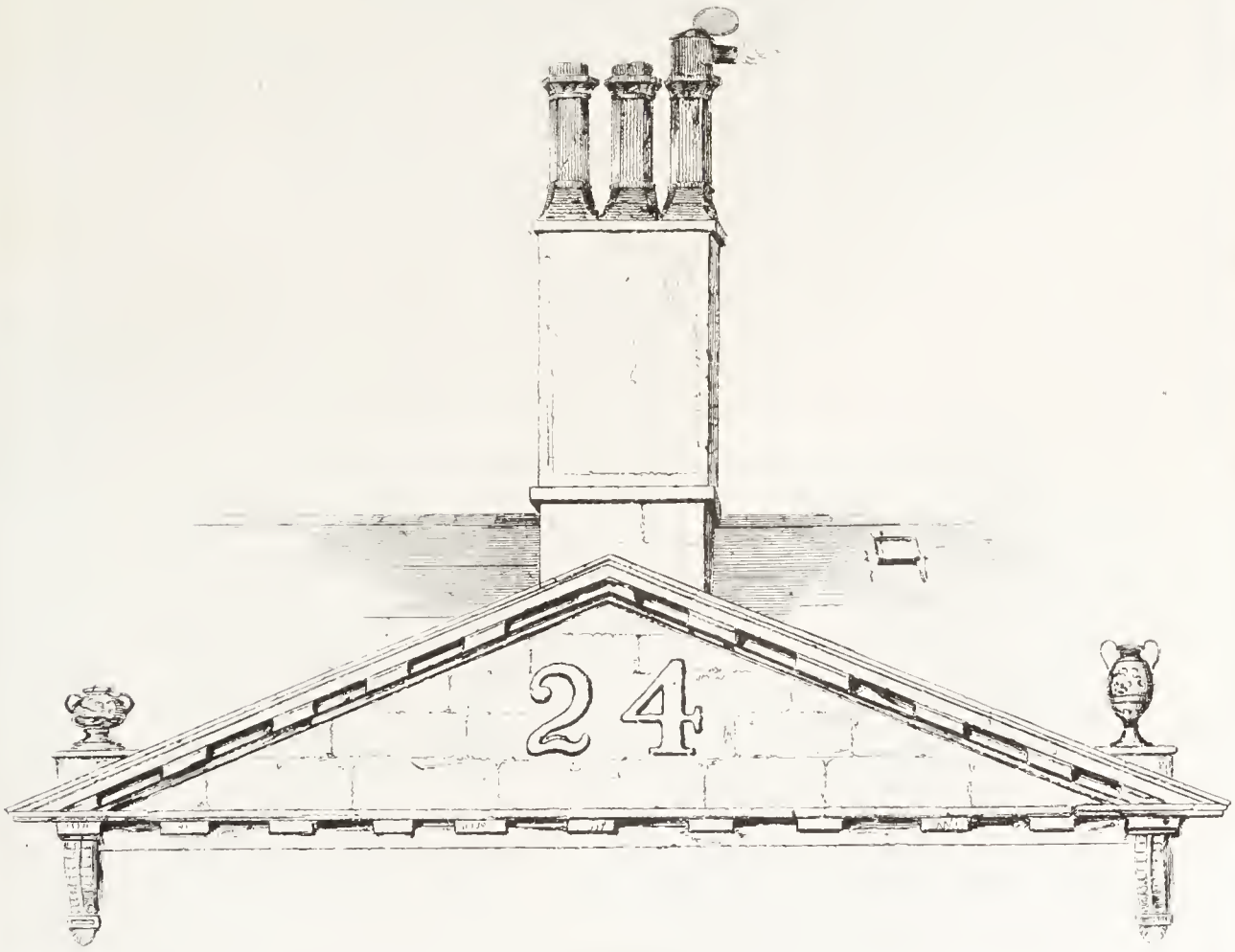
W.H.Lewis



Barbarous Architecture

Use and Abuse of Pediments.

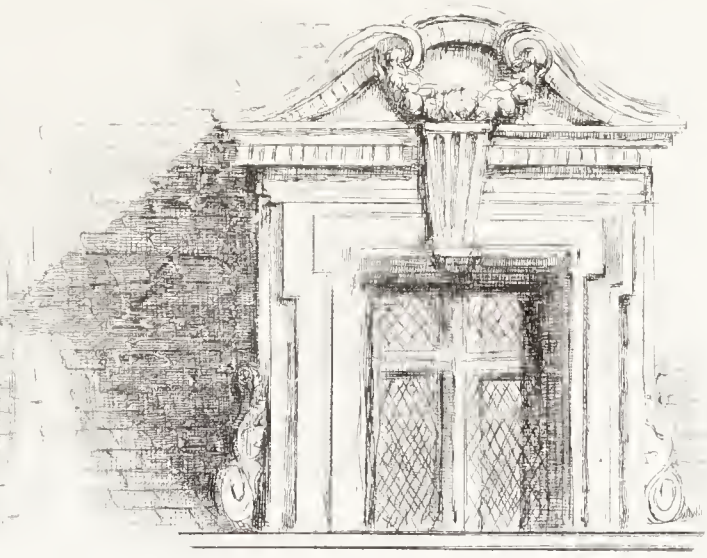
Ægina.



Edina

Storm Window

Fontainbleau



No. V.

ON

THE HILLS AND VALLEYS,

AND

THE WALLS AND GATES OF ROME.

The object proposed in the following paper is to serve as an introduction to a series, which it is hoped to communicate to the Institute, from time to time, on the Architectural Remains of Rome.

It will greatly facilitate the comprehension of the subsequent papers, if we first get a tolerably distinct idea of the site of the city, the varied surface of the ground which it occupied, and the boundaries by which it was enclosed; and the series, it is hoped, may tend to convey a permanent impression of what Rome now is, and possibly to give some idea, though but faint, of what Rome was in its glory.

PART I.

THE HILLS AND VALLEYS OF ROME.

Ancient Rome stood on a group of low hills on the eastern bank of the Tiber. These are spoken of as seven in number, viz.—the Palatine, Capitoline, Aventine, Cœlian, Esquiline, Viminal, and Quirinal.

On the west bank of the Tiber is the Janiculum Mount, which is not reckoned in counting the number of the hills, although a small portion of it was enclosed within the walls as early as the time of Ancus Martius (A. U. C. 125), in order to fortify the city against surprise on the side of Etruria.

The greater part of the modern city lies without the ancient walls, occupying the Campus Martius, and Collis Hortulorum, now Monte Pincio, on the east side of the Tiber and the Janiculum, and Mons Vaticanus, on the west, while the ancient city, within the walls, is now mostly occupied by gardens, vineyards, and mouldering ruins. On looking at the accompanying Sketch Map, No. I., it will be seen that the Palatine and Capitoline Hills occupy the centre of the group, and are surrounded to the south, east, and north-east, by the Aventine, Cœlian, Esquiline, Viminal, and Quirinal. To the north and north-west lies the Campus Martius, bounded by the Tiber, and on the opposite bank rise the long ridges of the Janiculum and Vatican.

It would not suit the object nor the extent of this paper to enter into disquisitions as to how much of early Roman history is fabulous, and how much of it is historically correct. However much the laborious investigations of Niebuhr and others may have contributed to the elucida-

tion of the truth, they, at the same time, sadly interfere with the pleasure of our classical recollections. The history of Rome, as exhibited by Niebuhr, bears the same resemblance to that of Livy or of Virgil, as the bones of a disinterred skeleton do to the exquisite sculpture of the Venus or the Apollo. We do not deny that much is fabulous ; but still we delight in the contemplation of it, and are unwilling to have the picture we have so often admired torn to pieces, and portions of it again presented to our view, patched together in a far less captivating form. We admire the vast learning and industry employed by Niebuhr, and we acknowledge with gratitude, that he has thrown much light on many very intricate subjects, yet we often feel, that while he has successfully exposed ancient fables, he has also (perhaps unconsciously) been erecting theories of his own, which are as much the creations of imagination as the speeches of Livy's heroes, or the episodes of Virgil.

In this and the following papers, we shall therefore follow the usually received story of Romulus, the seven Kings, the Consulate and the Empire ; and though we cannot point out the scenes of actions which had no being but in the poet's fancy, we shall have the satisfaction of lingering on the spots identified with these scenes in the minds of the ancient Romans.

According to Livy, Romulus built his original town on the Palatine Hill, which is said to have received this name from Palantium, the city of Evander, in Arcadia,* who, on his arrival in Italy, built his new capital on the same hill, where many ages after, Romulus laid the first foundations of Rome. Here Romulus had his own humble

* Livy, i. 5, Origo Gentis Romanæ, and Dion. Hal., ii. 1.

residence, and from the name Palatine most modern European nations have derived a word to signify a royal residence.

The time fixed by the ordinary calculations for the foundation of Rome, is the year 753 before our era; and those who are curious in these matters, have even pointed out the precise day to be the 21st of April.

The form of the Palatine Hill approaches to a right angled parallelogram, 6500 feet in circumference, and the highest part of it rises 170 feet above the level of the sea.*

Tacitus (An. B. xii. c. 24) gives a minute account of Romulus marking out the boundaries of his city, by a furrow commencing from the Forum Boarium on the N.W. of the Palatine, including within it the great altar of Hercules, and proceeding along the base of the hill on the west side to the altar of Consus, then along the south to the Curiæ Veteres, and the east by the Sacellum Larium to the Forum Romanum.

Some of these spots can be accurately identified.

The arch dedicated by the silversmiths to Septimius Severus, and now standing close by the church of Saint George, was one of the entrances to the Forum Boarium, as proved by the inscription upon it. The statue of Hercules, of gilded bronze, now in the Capitoline Museum, was found near the N. W. corner of the Palatine Hill;† and the great altar dedicated to him stood near the Forum Boarium, as we learn from Ovid.

> "Constituitque sibi, quæ Maxima dicitur, Aram
> Hic ubi pars Urbis de Bove nomen habet."
>
> Ovid. Fast. i. 587.

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* The heights of the hills are taken from Brocchi sul suolo di Roma.

† It was found in the 15th century betwixt the Bocca della Verita and the Church of Sta Anastasia.—Nibby, i. 132.

Upon the whole, we cannot err mueh if we place the altar of Hercules near the present Church of Santa Anastasia, and the spot where Romulus eommenced his furrow a few yards to the north-west of the door of the church. We cannot but feel a strong inelination to identify the spot where the Romans themselves believed that their founder first began to trace out the boundaries of the future Mistress of the World, and to persuade ourselves that we have succeeded in doing so; and we have lingered, on the 21st of April, with inexpressible interest in the vicinity of the spot, and meditated on the wonderful vicissitudes which have oceurred on the Palatine Hill from the time of Romulus to our own days, and on the mighty influences which have extended from it to almost every portion of our world.

The next point mentioned by Tacitus is the Altar of Consus, and this also can be ascertained, for Tertullian* informs us, that this altar was at or rather under the first Meta or Goal of the Circus Maximus. Now the Circus Maximus lay betwixt the Palatine and Aventine Hills, and the Careeres of it were near the Church of Santa Anastasia, already mentioned; and from the dimensions given by Dionysius, and aecurate calculations thence made, the Altar of Consus stood at the distance of 364 or 365 feet from the Carceres.† The area of the Cireus is now mostly occupied by vegetable gardens, and no traces of the Spina remain; but by measurement the situation of the Metæ may be fixed, and, of course, that of the Altar of Consus.

From this altar Taeitus leads us to the Curiæ Veteres, of whieh the exact situation is uncertain, though probably near the Areh of Constantine, and thenee to the Sacellum

* Tertul. de Spectaculis, and Burgess' Circus on Appian Way, p. 99.
† Burgess, i. p. 18.

Larium. This was probably a well-known popular chapel, but only one passage* in an ancient writer throws any light upon its situation. Solinus Polyhistor mentions that Ancus Martius lived at the top of the Via Sacra, "where stands the sacred house of the Lares.†" This must be near the Arch of Titus and the Church of S. Francesca Romana, whatever theory be adopted as to the Via Sacra.

From the Sacellum Larium, Romulus proceeded to the Forum Romanum, along the east side of the Palatine, and this, the north-east corner, is fixed, by the boundaries of the Forum, near to the Church of Santa Maria Liberatrice. Tacitus does not complete the circuit of the hill, but it may safely be done by an imaginary line drawn from the three marble columns, near Santa Maria Liberatrice, to the point from which we set out near Santa Anastasia; and it is on this, the northern side of the hill, that antiquaries have placed the Lupercal, the Ruminal fig-tree, and the Lake or Fountain of Juturna. Although it may not be easy for one not personally acquainted with Rome to form a clear idea of the course of Romulus' furrow from this description, yet the whole outline of the Palatine is most easily traced on the spot. From near the Church of Santa Anastasia the Via dei Cerchi leads along the west side of the hill, presenting us with striking views of the vast substructions of the Palace of the Cesars; the Via di San Gregorio conducts us along the south side up to the Arch of Constantine; and thence we proceed in a straight line under the Arch of Titus, and along the wall of the Orti Farnesiani to the three white marble columns, thus skirting the east side; and from these columns the Via di San

* Burgess, i. 19.

† "In summâ sacrâ viâ ubi Ædes Larium est." — Sol. cii. p. 153, quoted by Burgess, i. 19.

Teodoro leads us along the northern base of the hill to Santa Anastasia. No other of the seven hills is so clearly marked out to the visitor by its natural boundaries.

The Capitoline Hill lies to the north and north-west of the Palatine; it is of an oval form, 4400 feet in circumference, and 160 feet high. It was believed to be added to the city, says Tacitus,* by Tatius, king of the Sabines, that is, after the war caused by the violent seizure of the Sabine women, when it was agreed that Romulus and Tatius should reign together over the united nations.—See Sketch Map, No. II.

The Capitoline Hill has two summits, one of which was the Capitolium proper, and the other the Arx or Citadel; but which was the Capitol and which the Citadel is warmly contested by antiquarians. Betwixt them lay a small plain (the Intermontium), where was the Asylum opened by Romulus to all comers. The one summit is now clearly marked by the Church of the Ara Celi, and the other by the Palazzo Cafarelli. The Intermontium is occupied by the buildings erected by Michael Angelo for the Palaces of the Conservators, the Senator of Rome, and the Museum, forming three sides of a hollow square open to the north. The summit on which stands the church of the Ara Celi, rises about twenty-five feet above the level of the square, and the other, the Monte Caprino, about forty.

The outline of the Capitoline may easily be traced on the south side, where it was bounded by the Forum Romanum from the Arch of Septimius Severus to the Church of the Consolazione. The other three sides are encumbered by modern buildings, but the base of the hill is *nearly* marked out by the street which leads from the Consolazione

* Et Capitolium, non a Romulo, sed a Tito Tatio additum urbi creditur. — An. lib. xii. c. 24.

to the Piazza Montanara on the west side; thence by the Via tor dei Specchi, the Piazza Ara Celi, and along the Via della Petacchia on the north; and thence by the Via del Marforio on the east to the Arch of Septimius Severus.

This hill* was first named Mons Saturnius, from a city of Saturn, which is said to have stood upon it long before the days of Romulus; afterwards Tarpeius, from the treacherous Tarpeia, there slain by her Sabine countrymen; and finally, it obtained its present name from the reputed circumstance, that when Tarquinius Priscus was digging the foundations of the Temple of Jupiter, a human head was found, said, no one knows on what authority, to be that of a certain Tolus — thus, from Caput Toli was formed Capitolium. The finding of this head was regarded as a decisive omen of the future greatness of Rome.

The best view of the Tarpeian Rock is to be had in a court-yard near the Piazza della Consolazione, where the rock still rises to a formidable height, and where the tufa of which the hill is composed may be examined. It is coarse and very soft.

The other five hills enclose the Capitoline, and Palatine on the north, east, and west, and they all appear to have had steep, if not perpendicular, faces fronting the west and north, and to have sloped gradually down to the general level of the Campagna.

The Aventine Mount lies to the south-west of the Palatine, divided from it by the Murcian Valley. It is the lowest of the seven hills, being only 140 feet above the level of the sea. It is divided into two by a long and deep valley, extending from the Circus Maximus to the

* See Nardini, Lib. xi. c. 11 (p. 108, vol. i.)

Porta san Paolo. It was added to Rome, according to Livy (B. i. c. 33), by Ancus Martius, to accommodate the inhabitants of various Latin towns subduced by him, Politorium, Tellina, Ficanæ, Medullia. This addition probably only comprised the northern part, next the Tiber, and now marked by the churches of Santa Maria del priorato and Santa Sabina; for Dionysius Halicarnassus (Lib. iv. c. 26), makes its circumference 11,250 feet, which very nearly corresponds with the circuit of this portion. If, however, the other part of the hill, marked by the churches of Santa Sabba and Santa Balbina on its summit, and the stupendous ruins of the baths of Caracalla at its base, be added, then the circuit will be nearly doubled.

This hill can be very easily traced on the spot. The northern corner is marked by the church of Santa Maria in Cosmedino. From this church the Via di Marmorata leads us along the bank of the Tiber, which forms the north-west boundary of the Aventine for about 2500 feet; then leaving the Tiber at nearly a right angle, the same road marks out its western boundary to the Porta S. Paolo, and Pyramid of Caius Cestius. From this point the city walls form the southern boundary to the Porta San Sebastiano, and from this gate the Via San Sebastiano leads us in a nearly straight line to the Murcian Valley, or Circus Maximus, at the northern end of which is the church of Santa Maria in Cosmedino. The circuit of the whole is about 21,000 feet.

The Cœlian lies to the south-east of the Palatine. It is of an irregular form, long and narrow, 16,100 feet in circumference, and 165 in height.

Its original name was Querquetulanus, from groves of oak which grew upon it, and it was afterwards called Cœlius, from Cœles Vibenna, the commander of the Etruscans, who

came to the aid of the Romans (Tacitus, an. iv. 65), and settled on it. The time of this however is uncertain, Varro (Lib. iv.) placing it in the days of Romulus, and Tacitus in those of Tarquinius Priscus, but adding that historians differ about it.

The boundaries of this hill may be marked out as follows — The Colosseum stands at its north-eastern corner; the Via de San Gregorio divides it from the Palatine, and marks the north-western side; the Via San Sebastiano forms its western boundary, dividing it from the Aventine, to the point where the Acqua Marana intersects the road, then the course of this rivulet, to where it enters the walls, at the Porta Metronis, and thence the walls themselves (to about half-way betwixt San Giovanni in Laterano and Santa Croce in Gerusalemme) that is, to the Porta San Giovanni form the southern side, and the circuit of the hill is completed by passing from the vast buildings of the Lateran along the Via di San Giovanni to the Colosseum. Three of its corners are marked by the Lateran, the Colosseum, and the church of San Gregorio, while the summit is pointed out by the Church of San Stefano rotondo.

The Esquiline lies to the east of the Palatine, and is the largest and highest of the seven hills, and the most irregular in form. Its height is 190 feet, and its circumference is about 26,000 feet — though we cannot very exactly define its eastern boundary. If we restrict it by the agger of Servius Tullius, its circuit is made much smaller; and if we extend it to the present walls of the city, it becomes nearly 30,000 feet. Its outline is well marked on three of its sides. On the north-west a deep valley divides it from the Viminal, where now are the streets of Santa Pudenziana, and the Via Urbana. The Via Leonina continues along the base of the hill down to

the Tor dei Conti, and from this the Via del Colosseo forms its western boundary to the Colosseum, and thence the Via di San Giovanni divides it from the Celian on the south. It has several summits, and is always spoken of in the *plural;* thus Horace is said to have been buried "in extremis Esquiliis" (Sueton. in Vita Hor.) The two principal were the *Cispian,* where now stands the Church of Santa Maria Maggiore, and the *Oppian,* marked by the churches of San Pietro in Vincolis, and San Francesco di Paolo.

According to Livy, it was enlarged by Servius Tullius (L. i. c. 44), which implies that part of it was previously within the city, and he dwelt there himself to make it fashionable (*ut loco dignitas fieret*), but for a long period it appears that a large portion of it was used as a common burying-ground for slaves until Macænas adorned it with his house and garden. If this be the fact, it is scarcely consistent with its having been within the walls, or at least the Pomœrium, for within them no common funerals were permitted.

The Viminal is a small hill, of the form of an oblong parallelogram, or tongue, lying betwixt the Esquiline and Quirinal, and nearly surrounded by them. It has a circuit of 6600 feet, and a height of 160 feet above the Tiber. It is best seen from the Via San Vitalis, which runs along the ancient Vallis Quirinalis, forming its north-western boundary; from which the Via dei Serpenti on the west, and the Via Leonina on the south, and the Via Urbana and Via Santa Pudenziana on the south-east mark out nearly three of its sides, while on the fourth it joins the Esquiline and Quirinal nearly on the line of the Via delle Quattro Fontane, but nearer to the ruins of Diocletian's Baths. The summit is marked by the Church of San

Lorenzo in Pane e Perna, and from the garden behind this church the division of the Viminal from the Quirinal is very clearly seen; and it appears as distinct and well-marked as any of the other hills, although there be travellers who have not been able to discover it. It was added to Rome by Servius Tullius, and had its name from the twigs or osiers, Vimina, which grew upon it.*

The Quirinal Hill lies to the north of all the others. It is of a very irregular form — nearly enclosing the Viminal, and almost meeting the Esquiline. It has a circumference of 15,700 feet, and height of 148 above the sea.

It forms the eastern boundary of a part of the ancient Campus Martius, now occupied by the modern city; and its exact outline on this side cannot very well be identified with any of the modern streets. Part of its south-western corner was cut away to make room for the Forum of Trajan, and from this point we shall probably not err much if we follow the Via della Pilotta, Stamperia, and Tritone to the Piazza Barberini as the western boundary of the hill, and part of the northern; after this we have the Via di San Nicola di Tolentino and the substructions forming the south side of Sallust's gardens, forming the rest of the northern boundary. The Via Macao may mark the east side; and then the Via Strozzi and part of the Quattro Fontane bring us along the south side to the Via san Vitale and Via dei Serpenti, already mentioned as dividing it from the Viminal, and hence the Via Baccina and Piazza del Grillo lead us to the Campo Carleo and Forum of Trajan. It is uncertain by which of the kings this hill was added to Rome; but it is said to have received its name

* Varro, iv. 8. Pliny, &c., and Nardini, ii. 2; vol. i. p. 115.

from the inhabitants of Cures (Quirites), a city of the Sabines, who came along with Titus Tatius, and fixed their abode upon it; others derive it from the temple of Quirinus, which stood there. It had various summits — Collis Salutaris, Martialis, Latialis, and others; but so many alterations have taken place that it is not easy now to identify any of them. The northern extremity is well marked by the stupendous ruins of Diocletian's baths, and the southern by the Piazza di Monte Cavallo and the noble palaces which surround it.

Such are the relative situations of the *seven* hills of Rome. The attempt to point out their outlines may appear very tedious; but we know that to the student of antiquities, especially if in Rome, a little time will be very profitably spent in fixing in his mind these situations and general boundaries; it will greatly assist his further progress, whether on the spot or in the retirement of his study.

The Janiculum Hill lies on the opposite bank of the river, and to use a modern phrase, *commands* the seven hills. On this account it was that Ancus Martius ran a double wall from the Tiber up to the summit, near to where now is the fountain of the Acqua Paolina, and connected this with the rest of the city by the Sublician Bridge, the ruins of which may still be seen where the waters of the river are low. — See Sketch Plan No. III.

The upper end of these walls is supposed to have been nearly at the Pons Cestius, and the lower opposite the south-west corner of the Aventine Hill, and near the present Porta Portese.

This triangular enclosure comprised only a small portion of the Janiculum Hills, which extend along the west bank of the Tiber, until they join the Vatican Hill; a much

larger portion of them is contained within the modern walls. They do not appear to have been much inhabited in ancient times, but to have been rather occupied by gardens and places of amusement.

There is one hill more, which, though not within the original boundaries of Rome, must be here mentioned. The Collis Hortulorum, now the Pincian Hill. Together with the Quirinal it makes the eastern boundary of the Campus Martius. Commencing at the Piazza del Popolo, the western boundary of it is formed by the Via del Barberino and the Piazza di Spagna and the Via di due Macelli. The south side, from the junction of this last street with the Via del Tritone, runs along the latter to the Piazza Barberini, and then by the Via di S. Basilio, to the Porta Salara. From this gate round to the Porta del Popolo the outline is marked by the city walls. As its name denoted, it was anciently occupied by gardens, as a great part of it continues to be in modern times.

Our idea of the situation of Rome will not, however, be complete, until we have bestowed some attention on the valleys which lie betwixt the hills.

The most important of these, in regard to historical associations, is that which divides the Palatine from the Capitoline Hill, and thence extends to the Tiber. — See Sketch Plan II.

That part which lies next the river was anciently named the *Velabrum*, and still retains the appellation *Velabro*. It was originally a marsh, frequently overflowed by the Tiber; and it appears to me that the Cloaca Maxima was constructed as much, or more, to raise the level of this ground, as for the purpose which it also served, of carrying off the water and filth of the city, by receiving all the smaller sewers which were conducted into it.

One branch of it, called *Velabrum Majus*, extended up to the valley of the Circus Maximus, betwixt the Aventine and Palatine; and another, Velabrum Minus, extended towards the Capitoline Hill. The name Velabrum is derived by Varro, "a *vehendis* ratibus," alluding to the *ferry* across it. The upper part of the valley, lying between the Capitol and the Palatine, seems to have been originally a deep swampy ravine, with steep and rugged sides, filled up and levelled by Romulus and Tatius to form the Forum of their united cities. The Lacus Curtius is said to have occupied the centre of it, and the Cloaca was traced up into the Forum in 1742. This, according to Livy, was the scene of the battle betwixt the Romans and Sabines (Lib. i. cap. 12 and 13), and the smallness of the space proves how few the forces on both sides could have been. The width betwixt the Capitoline and Palatine no where exceeds 700 feet, and the whole length of this plain, if it may be so termed, from the Arch of Septimius Severus to the Tiber, is about 2000 feet.

The Palatine was separated from the Aventine by the Murcian valley, afterwards completely filled by the Circus Maximus. This valley is about 2500 feet in length, and from 500 to 600 in width. From the southern end of it extended the narrow valley formerly mentioned as dividing the Aventine into two hills.

The ancient Via Triumphalis passed along the valley which separates the Palatine from the Cœlian, and at the east end of it, a small plain which separates the Cœlian, Esquiline, and Palatine, gave space for the erection of the Colosseum. The flat ground to the east of the Palatine was occupied by the Via Sacra, and the many important edifices in its neighbourhood, while narrow valleys running into the Esquiline, and betwixt it and the Viminal, have

been identified with the Vicus Ciprius, Vicus Sceleratus, and Vicus Patrizius of ancient Rome. The flat space betwixt the Capitoline and Quirinal was too narrow to admit the Forum of Trajan, and therefore a portion of the latter was cut down to make room for it; and the remainder of the nearly level ground betwixt these hills and the Palatine and Cœlian was occupied, mostly by the Forums of Cæsar, of Augustus, and of Nerva, in the time of Imperial Rome.

Along the east side of the Quirinal Hill lay the Vallis Quirinalis, and on the west side a deep valley divides it from the Pincian, occupied by the Gardens and Circus of Sallust.

Within the walls of ancient Rome there was little flat ground excepting the spaces now described, and which may be considered as lying around the Palatine Hill; but immediately without the walls lay an extensive plain — the Campus Martius. It was bounded on the south by the Capitoline and the Velabrum, on the east by the Quirinal and the Pincian Hills, the latter of which approaches very near to the Tiber at its north-western corner, and along its remaining boundaries flowed the Tiber. Here, though without the ancient City, were erected many of the finest buildings of Rome, whether for public or private splendour, and here now stands the greater part of the modern City.

On the west bank of the Tiber, under the Janiculum and Vatican, lies a smaller plain of very irregular form. Here also were several important ancient buildings, and it is now occupied by a considerable extent of streets, with numerous churches and convents; while it is pre-eminently distinguished by the greatest monument of modern times, the Temple of St. Peter, and the Palace of the Vatican, whose thunders long shook the world, after those of Jupiter Tonans had ceased to be regarded.

PART II.

THE WALLS AND GATES OF ROME.

Of the walls by which Rome was first surrounded by Romulus, Tatius, and Ancus Martius, no trace now remains.

Tarquin the Elder is said to have planned the erection of walls of square stones, and the work was executed in great part by Servius Tullius, and completed by Tarquin the Second.

The general outline of these walls, which, without entering into the controversies of antiquarians, may be designated the walls of Servius Tullius, can be traced with tolerable certainty, and portions of them are still to be seen standing after the lapse of four-and-twenty centuries.

The annexed outline sketch (No. IV.), shows what is generally received as their direction, running along the top of the precipitous western fronts of the several hills, so as to make use as far as possible of the natural strength of the position. They commenced at the Tiber, nearly opposite the lower end of the Insula Sacra—not however then in existence—and keeping along the northern side of the Velabrum, soon reached the steep slopes of the Capitol, where they would join the walls of Romulus and Tatius.

On the east side of the Capitol they crossed a narrow valley to reach the Quirinal, about 3000 feet from the Tiber, a valley afterwards occupied by the Forum of Trajan. Hence the walls followed the edge of the Quirinal, first in a northerly, and then in a north-easterly direction, about 6500 feet, to the top of the valley which separates the Quirinal from the Pincian Hill, afterwards filled by the Gardens and Circus of Sallust.

Here we find, under the south side of the lofty terrace walls which support the Vigna Barberini, remains of the wall of Servius. They are about twenty feet long, from four to six feet high, built of parallelopipedons of soft peperine, varying from fifteen inches to two feet six inches in length, and all eleven inches high, and put together without cement. It is said that an excavation showed this wall to be only the facing or lining of the work, and that the body of it was composed of blocks of basalt.

This relic is neither beautiful nor imposing in itself, and yet few in Rome are more striking from its unmistakeable air of antiquity. The stone is very soft, and it is highly probable, that it owes its preservation to having been for ages buried under the earth, and disinterred in levelling the ground for modern use.

Emerging from the upper end of this valley we find ourselves at two interesting spots. Within the Vigna Barberini, at its south-east corner, is the Campus Sceleratus, where Vestals, who had broken their vow, were interred alive ;* and very near the spot where the modern Via Macao leaves the Via Pia, must have stood the ancient Porta Collina. By this gate the Gauls entered Rome in the year of the city 363; and by the same gate the Goths, under Alaric, took possession of this quarter of the city, and utterly ruined it 800 years after (A.D. 410).

Looking from this point towards the south-east, the eye passes over a long gentle slope, broken indeed by many buildings, both ancient and modern, but affording no line of natural strength. This was the weakest side of Rome, and that also which most required defence, being the quarter

* Plutarch, Numa (p. 67, Edn. Wechel, 1599). ἡ δε την παρθενιαν καταισχυνασα, ζωσα κατακρυπτεται παρα την Κολλινην λεγομενην πυλην, and Livy, viii. 15.

against which the attacks of the Sabine, Volscian, and Latin tribes might be expected.

Here, therefore, Servius Tullius erected his great mound or agger, of which the greater part is still to be seen. It appears to have been originally an earthen mound, but faced on the outside with stone either by Servius or Tarquin. Of the stone-work no part is now visible, but a section of it was seen by the antiquary Bartoli, who describes it as of Peperine, and of great thickness.

It commenced near the Porta Collina, and extended, according to Strabo (Lib. v.), six stadia in length; but according to Dion. Halic. (Lib. i. c. ix.) nearly seven. Its exact length cannot now be measured, as both ends have been levelled. Starting from the Porta Collina, it runs nearly south for two-thirds of its length, and then forming an obtuse angle, runs S.S.W. for the remaining third, until it disappears behind the church of San Antonio.

Traces of it are to be seen in the Vigna Barberini, where it commenced; it is very visible within the garden of the Camaldolites, behind the baths of Diocletian; but it is best seen in the Villa Negroni, where a few tall trees and a colossal sitting female figure mark the highest point, from which its course is distinctly seen. It here rises about thirty feet above the general level of the ground. It is said to have been originally one hundred feet wide and thirty high.

From the southern end of the agger, round the south-eastern side of the city, the site of the Wall of Servius is uncertain, though mounds near the Lateran are supposed by some to be the remains of it; but from the Lateran they are *probably* enough conjectured to have occupied the edge of the Cœlian Hill, and then to have crossed the narrow valley where stood the Porta Capena, and then to have

ascended the steep sides of the Aventine; but whether so as to include or exclude the space now occupied by the ruins of Caracalla's Baths is uncertain. A fragment of very ancient masonry exists near the Church of Sa. Balbina, which, by Sir William Gell and others, is regarded as a portion of Servius' Wall. In style, it is very similar to that in the Vigna Barberini; but the stones are larger — one as much as five feet in length, and all from twenty-two to twenty-four inches high. The alternate rows present the ends and sides of the stones, and it is of Pietra Gabina — a hard peperine; and if this be a relic of the Wall of Servius, then the site of Caracalla's Baths was beyond the limits of the ancient city.

The walls now proceeded along the edge of the Aventine, to the point where the hill approaches so near to the river as only to leave space for the modern Via della Marmorata, and here they seem to have terminated, about 1000 yards below their commencement.

Of the Walls of Servius, on the western bank of the Tiber, no portion remains; they are only *supposed* to have commenced opposite the termination of the walls on the eastern side, and to have run up as directly as they could to enclose the Arx Janiculensis, now marked by the Church of San Pietro in Montorio and the fountain of the Acqua Paola, whence there is one of the best views of Rome, the whole lying stretched out like a map below the eye.

The total circuit of Servius' Walls is about seven miles.

By the laws of Rome, whosoever added to the territories of the state was entitled to the honour of extending the boundaries of the city; but few of the conquerors, either of the Republic or of the Empire, appear to have availed themselves of this privilege to any noticeable extent. Sylla is the first who is named as having done so, A. R. 674.

Julius Cæsar followed his example, and so did others; but it is doubtful, in many cases, whether these were really extensions of the walls, or only of the Pomœrium, which did not always, nor necessarily, correspond with the walls; and sometimes they were only the clearing away of buildings unlawfully erected upon the sacred Pomœrium.

Upon the whole, the Walls of Rome remained for about 800 years nearly as left by Servius, or until the time of the Emperor Aurelian.

When he was about to set out on his Palmyran expedition (A. R. 1026, A. D. 273), it was considered expedient to enclose within the walls the nearer and more populous suburbs of Rome, a clear proof, that notwithstanding the gigantic extent and resources of the Empire at the time, the inhabitants of its capital were even then beginning to dread the inroads of their barbarian foes, and were losing confidence in themselves.

There has been much controversy about the Walls of Aurelian, owing to a single passage in Vopiscus, supported indirectly by only one other ancient authority. He states most distinctly, that Aurelian's Walls were fifty miles in circuit. "Muros urbis Romæ sic ampliavit ut quinquaginta prope millia murorum ejus ambitus teneant."—(Vopisci Vita Aureliani, cap. 39). And a statement by Tacitus has been brought forward as confirmatory of the great extent of the walls; for, speaking of the Emperor Claudius I., he informs us, "Condidit lustrum, quô censa sunt civium 5,884,072." —(Annales, Lib. xi. c. 25.) Certainly if the inhabitants were about six millions, they would require fifty miles, at least, of walls to enclose them in comfort; but it is quite clear, that Tacitus here is not speaking of the inhabitants of Rome, but of the number of persons who enjoyed the right of Roman citizenship throughout the Empire.

With regard to the assertion of Vopiscus, there are two reasons which seem sufficient to prove that there must be an error in the text, and that a transcriber had written *quinquaginta* fifty, for *quindecim* fifteen. It is clear from the manner in which the work of Aurelian is mentioned (Vop. c. 20 and c. 22), that it was resolved upon, after consulting with the senate, and that it was forthwith begun and completed before he set off on his expedition against Zenobia; and even with all the resources of the Empire at his command, it is obvious, that not only a mere fragment, but the whole length of Aurelian's reign of only five years, would not have been sufficient for such a work. But what is perhaps more to the purpose, of these fifty miles of lofty walls, not a vestige can now be discovered in any direction around the city of Rome; and, had they ever existed, it is impossible they could have so disappeared as to leave not a trace behind, while so many ruins of similar or greater age still remain.

In considering the Walls of Rome as they now exist, we may then safely consider, that they were erected by Aurelian, mostly on their present site, use being made of whatever buildings were found on the spot which could, by possibility, be pressed into the service; that they were repaired extensively, and perhaps in some places altered, by Arcadius and Honorius, in their hasty repairs in consequence of the approach of the Getæ —

> "Addebant pulchrum nova mœnia vultum
> Audito perfecta recens rumore Getarum."
>
> Claudian in VI. Cons. Honorii, l. 529,

and again by the valiant Belisarius and others, to restore the breaches made by the assaults of the Goths, Vandals, and Heruli; and finally brought to their present state by

the works of the successive Popes of many centuries repairing the injuries done by the attacks of Lombards, Neapolitans, Saracens, and, worst of all, by the wars of the Roman Barons with each other and with the Popes.

The dates of the ancient works are occasionally ascertained by inscriptions — those of the Popes and Cardinals have commonly their escutcheons, and inscriptions too, to mark them; but long tracts of the ancient work can only be fixed as to dates by style, or by historical records.

The Walls must have been well built, for a great part of them still stand as at first, notwithstanding all the trials to which they have been exposed.

The height now is, and probably always was, very various — from twenty to twenty-five feet at the lowest parts, to fifty or sixty in the highest, near San Giovanni in Laterano.

They were protected and strengthened by numerous buttresses and towers, the greater part of which remain, more or less entire, to the present day.

The writer, known as " The Anonymous of the Eighth Century" has left a full account of the walls as they existed in his day, which very closely corresponds with what we now see. He states the total number of towers to be 383, and the battlements on the walls to be 7020. Of the latter few remain.

The entire length is about thirteen miles, viz.—ten and a half on the east bank, enclosing Rome proper, and two and a half on the west bank, enclosing Trastevere.

The principal part is built of brick Laterizia, but interrupted perpetually by portions of more ancient buildings of brick or of stone, and again by hasty repairs of coarse rubble work, or of stones and bricks, and road pavement, taken from the nearest building or roadway in the hurry of warfare. Much of the beauty and interest of the Walls

of Rome arises from this singular admixture — from the picturesque ruined towers fringed by shrubs and plants, and from the varied outline, partly caused by the nature of the ground, and partly by the twistings and turnings of the wall to get hold of more ancient buildings.

After these general remarks let us make a rapid excursion round Rome, noticing only the more important features of the Walls. The map produced shows the outline of them very distinctly. We shall start from the Porta del Popolo, well known to most English travellers as that by which they enter Rome.

It stands about 1000 feet from the Tiber, and not very far from the site of the ancient Porta Flaminia, which was on the slope of the Pincian Hill. From the gate to the river the remains of the Wall and its towers may be traced quite distinctly, but greatly encumbered by modern dwellings of the lowest class, by a slaughter-house and a wood-yard.

The Porta del Popolo was erected by Pius IV. in 1561, after a design of no beauty by Michael Angelo. It is of travertine, ornamented externally by four Doric pillars — two of granite and two of breccia. The interior front was erected by Alexander VII., after designs by Bernini, in 1665, to commemorate the visit of Christina, Queen of Sweden.

Following the wall for about 200 yards, we come to a considerable extent of very fine brick work, of a much older date than the days of Aurelian, and which evidently was erected to keep up the sides of the Pincian Hill (Collis Hortulorum), where lay the gardens of Pompey and Lucullus, and also the tombs of the Domitian family, and of course of Nero whose ghost seems to have given infinite trouble to this quarter of Rome for hundreds of years after his death.

The front of the wall is broken by niches, and one part of it is well known to travellers by its name of *Muro Torto* or twisted wall.

This portion is about forty or fifty feet long, quite overhangs the road, and appears at every moment ready to fall; and yet it has been in the same state for full 1200 years, being described by Procopius (Lib. i. c. 23) very nearly as it now stands.

Procopius further informs us, that when Belisarius wished to repair this portion of the wall, he was prevented by the Romans, who assured him, that St. Peter had taken it under his special protection, and adds, that up to his day the Goths never attempted to scale that part of the wall, neither by day nor by night. The tradition still flourishes among the Romans, who believe that St. Peter will neither permit it to fall, nor suffer any foe to enter by it.

It is of the very best workmanship, of brick reticulata —probably of the age of Claudius or of Nero; and it is very difficult to account for its present position, whether by the pressure of heavy buildings on the earth behind it, the sinking of the foundations, or the violent shock of an earthquake, all of which have been suggested. The fact of its having hung together for so many ages is an ample proof of the excellence of the work and of the mortar employed.

It was against this side of the city that the Goths directed several of their most violent assaults; and it was here, on the Pincian Hill, that Belisarius took up his quarters during the attempts of Vitiges to regain the city from which he had been driven.

Leaving the Muro Torto and adjoining substructions, the wall turns, at nearly a right angle, and proceeds for about 3500 feet in a northerly direction, skirting the Pincian

Hill, and both walls and towers are mostly the work of the middle ages, excepting the foundations. The wall then makes a sharp turn outwards, and runs towards the east for about 8000 feet, when it joins the lofty walls of the Castra Pretoria. Most of this part is the work of Aurelian, Honorius, and Belisarius, and the towers seem more frequent than in other parts, and the whole conveys a vivid idea of many buildings and repairings—some in haste and some at leisure — brick work, squared stones, and rubble work succeeding each other, and marking the exact spot of every breach.

In this part of the wall are four gates — three ancient and one modern; and before reaching the first of these, the Pincian, we find a very excellent specimen of Aurelian's Wall.

The Pincian Gate appears to remain nearly as it was left by Belisarius, by whom it was built, and by whose name it was at one time known. Nor ought we to forget, despite the scepticism of Gibbon, that it was here, on the very scene of his former glory, that after his fall he sat and cried "Date obolum Belisario."

It is a plain archway of blocks of Travertine, flanked on each side by a round brick tower, having embrazures of modern date on the top. It is now closed—as are many of the ancient gates—not now required for the diminished population of the city.

About 1000 yards farther on, we reach the Porta Salaria, which is nearly a fac-simile of the Pincian, and of the same age — a few shrubs growing out of the walls enhance its appearance. It is still open, but not much used.

The next gate is the Porta Pia, about 300 yards from the Salaria, erected by Pius IV., not in the line of the

Walls, but within them, and approached by a simple arch cut through the wall. The design is said to have been given by Michael Angelo, but is singularly complicated, unsuitable, and tasteless. It may give some idea of it to say, that the interior front is like a three story villa, with a great door in the middle, and three windows, one above the other on each side, and a fragment of an unfinished tower rising above all.

The gateway stands at the end of the modern Via Pia, and was substituted for the ancient Porta Nomentana, now closed, but still to be seen distinctly in the wall. This gate was so near the Castra Pretoria, that as the Emperor Nero fled by it from the city, he could hear the menaces of the furious soldiery.—(Sueton. Vita Neronis, c. 48).

We have now reached one of the most conspicuous portions of the Walls, the Castra Prætoria; and in order to make use of them, the wall turns wholly away from its natural direction, and projects forward, so as to be particularly visible in every direction.

The northern side is about 1250 feet long, the eastern 1600, and the southern 750; the greater part is of brick; but portions of basement of stone, of considerable extent, are seen on the northern side.

Three closed gateways may still be observed, corresponding to the Dextra, Decumana, and Sinistra, of the camp, each of square blocks of Travertine, and about 13 feet wide.

The Castra were built by Tiberius, and abandoned, as the camp of the Pretorians, and dismantled by Constantine. The brick work is among the best in Rome—the eastern side is almost entire, even to the cornice, but the southern presents a confused mass of the work of Tiberius, of the Lower Empire and the Popes.

Adjoining the south-eastern corner of the Castra, there is an ancient gateway shut up, supposed to be the Porta Viminalis, from its situation.

Hence the wall runs in a nearly straight line south-east for 3000 feet to the Porta San Lorenzo. This is the ancient Porta Tiburtina, and is the work of Honorius, A. D. 402, as shown by an inscription still remaining. It is a plain massive building of Travertine, but has a more imposing effect than belongs to itself, from having been built against a portion of the aqueduct which conveyed the Marcian, Tepulan, and Julian waters, and under which the ancient Via Tiburtina passed.* This mass of buildings, with the varied lights and shades, is very striking.

From this gate the wall continues in nearly the same direction for 2700 feet, when it turns round at a right angle to meet the Porta Prænestina, now Porta Maggiore.

This portion exhibits much variety of age and style, mostly the work of Aurelian, but mingled with fragments of more ancient buildings—in one tower, mostly of ancient stones, one may be noticed, having an inscription turned upside down; another contains many pieces of marble; and near this a portion of an aqueduct occurs in the wall — the channel (or specus) of squared stones (peperine) is visible, and close to the gate we see the flank of an arch, which exhibits the channels of three aqueducts.

The Porta Maggiore itself is a castellum of the Aqua Claudia and Avio Novus, having three inscriptions upon

* It may be worth noticing, that the present roadway is apparently on the level of the road, as left by Honorius, but it is many feet above the level of the original Via Tiburtina, for the building of the aqueduct is buried up to near the spring of the arch, proving the great destruction of buildings and accumulation of soil which must have occurred betwixt the building of the aqueduct and of the present gate — *i. e.*, about 300 years, or from A. R. 720 to A. R. 1025.

it, the highest of Claudius, the second Vespasian, and the lowest Titus. The building is of Travertine and peperine, without cement, lofty and imposing; the design is good, but the work inferior. It consists of two large arches, formed by three masses of masonry, each pierced by a narrow doorway and a blank window adorned by two Corinthian pillars supporting a small pediment. Above these are the entablatures with the three inscriptions; and as these are equal to fully one-third of the whole height of the building, they give it a very massive, not to say *heavy*, effect.

It is greatly encumbered by modern buildings, but a plan of it before their erection was made by the antiquary Cammucci, by means of which the whole can easily be made out on the spot. Only one of the roadways is now open.

A few yards beyond the gate, the Walls turn again at a right angle, and continue their course south-east for 1200 feet. This was done to make use of the venerable arches of the Claudian aqueduct, and the substructions of what is called the Vivarium. The wall here thus consists of the stone arches of the aqueduct, beautifully built, filled up with brick-work, and with the addition of brick towers by Belisarius. No part of the present Walls has more of the air of hoary antiquity.

Leaving the arches of the Claudian aqueduct, and passing under those of the modern Acqua Felice, the Wall turns westward, and soon meets the ruins of the Anfiteatro Castrense.

Nearly one-half of this building has been used for the city walls. It is of brick laterizia, of excellent work, of the Corinthian order, and two stories high; but of the upper only fragments remain. The piers which form the lower arches have each a brick Corinthian column, and the upper

had a pilaster of the same order, of which one may yet be traced. Some of the lower columns are entire, but two or three of the middle arches have been destroyed and rudely rebuilt. The work is usually attributed to Caracalla, but the brick work seems better and older than that of his age. It is singular that the Regionaries are the only ancient writers who so much as name this extensive building.

No part of the Walls of Rome has suffered more from sieges and assaults than the space from the Porta Maggiore to this amphitheatre, as is shown by the repairs as well as by history. Here Vitiges made one of his desperate assaults (Procopius, i. 23), and here also Laudislaus forced his way into the city in 1408, and again in 1415.

From the amphitheatre the wall runs north-east for about 5000 feet, to the point where the Acqua Marana, the ancient Acqua Crabra, enters the city. This is the finest portion of the Walls — the loftiest and the most entire.

Entering by the modern gateway of San Giovanni, we find that the Walls here were provided with two stories of arcades, by which the soldiers could pass from one part to another without being exposed. The brick work is good, and the effect greatly improved by the plants and shrubs which have established themselves upon it.

There is no more striking view in Rome than from this point (inside the gate), surrounded by the lofty walls, the ruins of Nero's Aqueduct, and the buildings of San Giovanni and Santa Croce.

The modern gateway was built by Gregory XIII. in a rude rustic style.

A few yards from it are the picturesque ruins of the towers and buttresses of the ancient Porta Asinaria, now closed, but by which Belisarius first entered Rome, and

which the Isaurians betrayed to Totila A.D. 550.* It is now closed, and the wall near it rests on ancient ruins, perhaps part of the house of Lateranus.

The Porta Metronis appears to have been built merely to admit the Acqua Crabra, and an inscription records its repair in 1157. From it the wall turns sharply to the south, and a space of 2250 feet brings us to the Porta Latina; and of these walls a part rests on ancient stone-work, the remains of an aqueduct, viz.—the Specus Octavianus.

The Porta Latina, still known by its ancient name, is flanked by two round towers, and is of substantial plain stone-work, repaired, if not built, by Belisarius. On the keystone is the Christian monogram, with Alpha and Omega. Above the gateway are niches—perhaps, originally, an arcade for the soldiers—and on the top are battlements of more modern date.

From this the wall sweeps round to the Porta Appia, now San Sebastiano, at a distance of 1800 feet. These two gates, the Latina and Appia, came in place of the celebrated Porta Capena, from which the Latin and Appian ways diverged, and which must have stood about 1000 yards within the present walls.

The lower part of the Porta Latina is built of blocks of good marble, taken probably from the nearest tombs on the Appian Way. The upper part is brick, and there are a few Greek letters on the keystone, and an inscription so defaced as to afford excellent matter of controversy to those who desire to decipher it.

The ancient arch, seen just within the gate, is that of Drusus, and had no connection with the walls.

* Procopius, i. 14, and iii. 20.

The wall now proceeds about 2000 feet westward, composed of the mingled works of the first four centuries; and at an angle in it occurs a brick arch, supposed by some to be the Porta Ardeatina. It is adorned by two half columns of good work, and apparently more ancient than the adjoining walls.

Passing this, we are almost startled by coming suddenly upon a modern fortification—the bastion of San Gallo—erected by Paul III. in A.D. 1540, and already in a more ruinous state than many of its more ancient neighbours. This transition from the second or third to the sixteenth century—from the defence against swords and spears, to that against the powder and ball of modern warfare, brings vividly before us at a glance the changes produced in the world by the progress of discovery and the lapse of time.

The bastion extends about 1200 feet, and from it the wall runs 1200 feet north-westward, and then turns suddenly to the west and sweeps round 2000 feet to the Porta Ostiensis, now San Paolo. Internally this is a double gateway, but externally there is only one opening, built by Honorius, whose name, though now effaced, was read in the inscription by the antiquary Poggio. The two flanking towers are among the most entire which remain of brick, and the upper floor of each has a row of ten arched windows, and the cornices have afforded space to many shrubs and evergreens to plant themselves. The gateway is of substantial *opus quadratum;* by it Totila entered Rome on his second invasion, in the middle of the sixth century, and Ladislaus of Naples in the beginning of the fifteenth.

A few yards from this gate the city wall embraces the pyramidal monument of Caius Cestius, thus made to form

a part, and a most substantial part, of the defences of the city.

From this point the wall turns in a direction north of west for 2800 feet, which brings us to the Tiber. No gate occurs in this part of it, which seems to have been built to include the Monte Testaccio, which, though evidently formed of the refuse fragments of ancient brick and tile works, is as conspicuous, and nearly as high, as several of the Seven Hills.

Along the east bank of the river, considerable remains of the wall may be seen for about 2000 feet above the point of junction; and for 3000 more, substructions and fragments may be traced, but whether of walls or of quays it is hard to say. They continue up to the ruins of the Emporio, where the Aventine Hill comes to the Tiber.

The circuit we have thus made is about 46,000 feet, or rather more than eight miles and three quarters, and the remaining mile and three quarters to make up the total circuit, is furnished in the space extending from the point where the Walls join the Tiber, to that where we commenced our circuit, part of which was certainly provided with walls, especially along the north-western side of the Campus Martius. The traveller in Rome can hardly make a more interesting or instructive expedition than by walking or driving round the Walls.

The Walls on the western side of the river or Trastevere, need not detain us long. A considerable part of the southern side remains visible, running up behind the Arx Janiculensis, and of precisely the same work as already described, perhaps too minutely. The northern side of Aurelian's Wall is no longer to be traced, being either demolished, or hid by modern dwellings and churches.

The southern side was about 4000 feet long, and the northern, along its supposed course, about 3000.

The modern fortifications are of far greater extent — partly planned by Michael Angelo — and embracing the Tomb of Hadrian (Castle of Saint Angelo), St. Peter's, the Vatican, and the whole long range of the Janiculum, and extending about 23,000 feet, or about four and a half miles. The only picturesque spot is about the modern Porta San Pancrazio, where there are considerable remains of the ancient wall; and at this point the assaults of the French in 1849 have rendered necessary the most recent of the repairs of the Walls of Rome; and at the same time have raised, it is to be hoped, an imperishable memorial of the genuine import of Liberty, Equality, and Fraternity, from the lips and in the hearts of the republicans of modern Gaul.

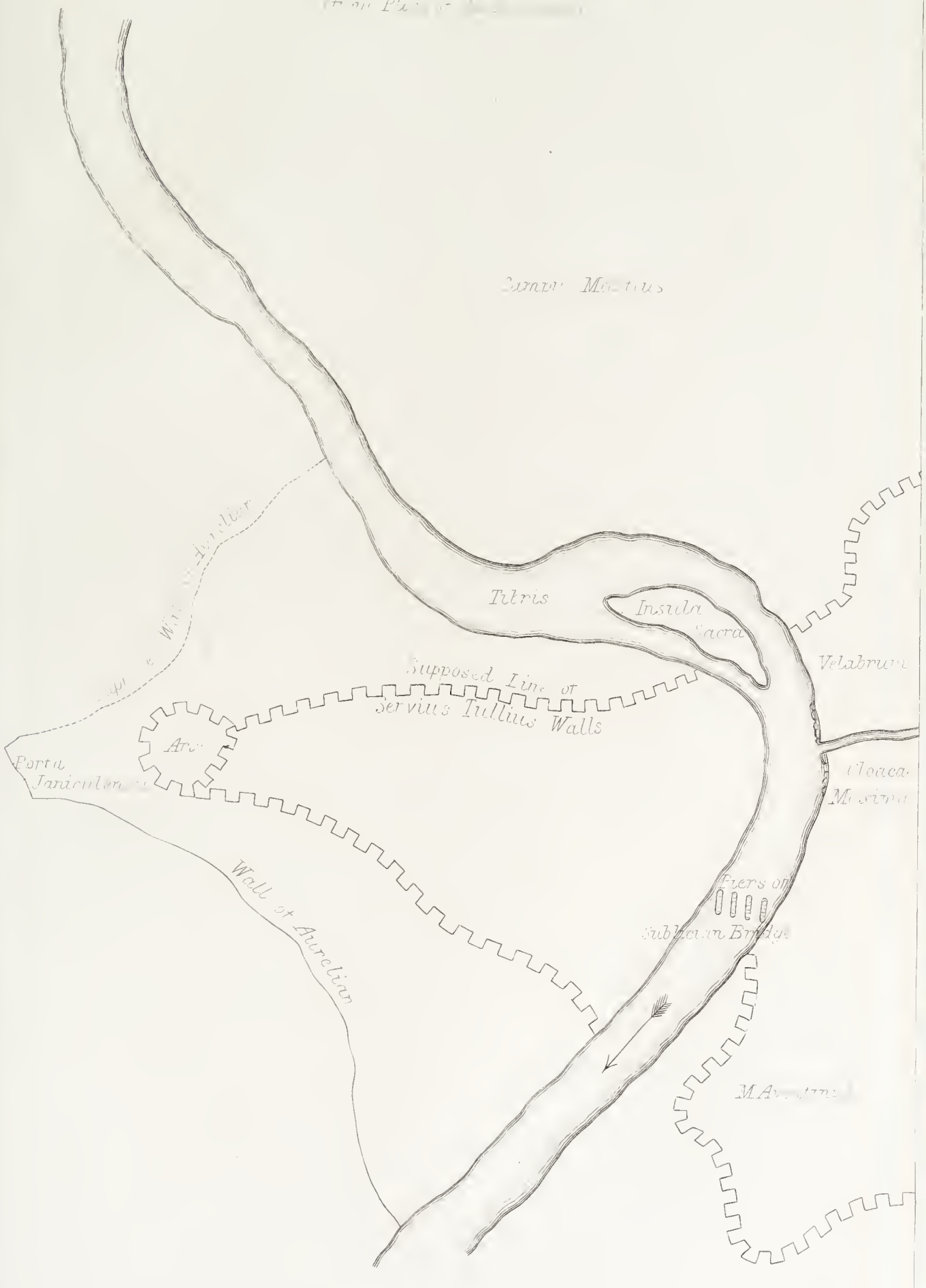
N. I.

To illustrate the relative positions of the Seven Hills
(from an old Plan in Nardini)

N° II.

To illustrate the relative situations of the Palatine and Capitoline Hills
(from an old Plan in Nardini)

1 _ Commencement of Romulus's Furrow
Altar of Hercules.
2 _ Altar of Consus
3 _ Arch of Constantine
near Curia Veteres.
4 _ Arch of Titus
near Sacellum Larum
5 _ S.ta Maria Liberatrice. Entrance of
Forum Romanum.


Campus Martius
Tibris
Insula Sacra
Velabrum
Supposed Line of Servius Tullius Walls
Porta Janiculensis
Cloaca Maxima
Wall of Aurelian
Piers of Sublician Bridge
M. Aventinus

To illustrate Walls of Servius Tullius
(from Plan of de Romanis & Nibby.)

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No. VI.

ON

THE ANCIENT TOMBS OF ROME

AND

ITS IMMEDIATE VICINITY.

BY

ALEXANDER THOMSON, Esq. of Banchory.

[*Read at a Meeting of the Institute in Aberdeen, on 9th March*, 1854.]

The manner in which a people dispose of the remains of their dead is in every country an interesting subject of inquiry, and throws much light on the manners and feelings of successive ages.

There is something very touching in exploring the tombs and reading the monumental inscriptions of the Heathen. We cannot but regard them as the natural longings and strivings of unenlightened hearts after some kind of immortality. They had not the clear light of Revelation to tell them of the resurrection of the body and the life to come; for on this most important of all questions, even their most advanced philosophers can scarcely be said to have had a gleam of hope beyond the grave, and yet there was in every heart an innate longing after prolonged existence; and hence the care which the Heathen took, in one form or other, of the remains of the dead, and hence the proud and costly

monuments erected to hand down to future ages the names and memorials of themselves or their friends, thus bestowing a sort of *worldly immortality*—a prolonged existence among their fellows. They knew of nothing better, but even this was precious to them, and poor and worthless as it must seem to the Christian, they laboured earnestly to attain to it. A tomb, or a funeral at the public cost, was counted an ample reward for a life spent in the service of the State. As pride and wealth increased, family affection, or even riches alone, procured what public esteem never would have awarded. Several of the finest remaining tombs are in honour of persons otherwise unknown to fame, and in this respect the builders have fully attained their object; they have handed down the names of the dead to succeeding ages —probably have secured their preservation to the end of time.

According to Cicero, burying in the earth was the original mode of sepulture among the Romans. "At mihi quidem antiquissimum sepulturæ genus id fuisse videtur. Redditur enim terræ corpus, et ita locatum ac situm, quasi operimento matris obducitur. Eodemque ritu * * * Regem nostrum Numam conditum accepimus."* The account given by Pliny is very similar.†

Probably the practice of burning, previously introduced, was greatly promoted by the laws of the Twelve Tables, the tenth of which relates exclusively to the subject of funerals. The Twelve Tables were received as law A. R. 301, B. C.

* Cic. de Legibus Lib. ii. cap. 22.

† "Ipsum cremare apud Romanos non fuit veteris instituti; terra condebantur; at postquam longinquis bellis obrutos erui cognovere, tunc institutum; et tamen multæ familiæ priscos servavere ritus, sicut, in Cornelia nemo ante Scyllam Dictatorem traditur crematus."—Pliny Hist. Nat. vii. 54.

452. These strictly prohibited the burying or burning of the dead within the city—"Hominem mortuum in urbe ne sepelito, neve urito;"* and it is well known that this was a fundamental law of Solon, which the Athenians long continued to observe, even after they had become subjects of Rome, as we learn from the letter of Sulpicius to Cicero, announcing the death of his colleague Marcellus, and the impossibility of obtaining permission to bury him within the city, "quod religione se impediri dicerent neque tamen id antea cuiquam concesserant."† It would be well for us, if with all our advances beyond the civilization of Greece and Rome, we were even now to adopt this ancient law, and in like manner to prohibit funerals within our crowded cities.

The third chapter of this Tenth Table prohibits all excessive mourning and expense at funerals; the employment of any other than rough wood for the funeral pile; or of more than ten musicians in the procession. Women are forbidden to tear their faces or to howl; drinking (*circumpotatio*) is strictly prohibited; and precious liquors are not to be employed to anoint the body, nor to be poured on the funeral pile.

The ninth law provides against more than one funeral ceremony for the same individual, and the tenth is directed against the burying or burning of gold along with a body, but with a singular exception in favour of those who had worn false teeth set in or secured with wires of gold. "Neve aurum addito, ast quoi auro dentes vincti escunt, im cum illo sepelire urereve, se fraude esto."

The fourth chapter provides, that no one shall establish a funeral pile within sixty feet of his neighbour's property without his consent; and the fifth and last separates tombs

* Table X., C. II.

† Epist. Familiares, IV. 13.

and burning places from all common uses, and as it were, consecrates them for ever to the service of the dead. "Fori, Bustive æterna auctoritas esto."

These laws are very brief, but they show clearly, that even in these early days of Rome, the tide of popular fashion set strongly in the direction of costly funeral rites, and that the rulers of the people desired to restrain and check the feeling. They did not succeed; nor will any sumptuary law ever be of much use which does not carry with it the general sympathy of the age.

The laws of the Twelve Tables remained in force until the Roman Empire fell; but they did not prevent boundless expense in the funerals of the great and the wealthy. The regulation of private funerals came under the jurisdiction of the Ædiles, both in Republican and Imperial Rome; and we shall presently meet with instances of their interference, and that with just so much of success as to show how powerless the laws of the State and the edicts of the Ædiles were to restrain the public taste for funeral splendour.*

Much care was taken to secure the property of tombs; and not uncommonly their destination and their size, whether erected by themselves or their heirs, were inscribed on the tomb itself. Many such inscriptions are preserved in the Lapidarian Gallery of the Vatican; and it is curious to observe the different feelings by which men are actuated in this matter. Some wished to secure the burying place for themselves alone, and then we find the Letters, H. M. H. N. S. Hoc monumentum Hæredes ne sequatur. An-

* Laws regarding funerals occur in various parts of the Pandects, especially in the seventh Title of Lib. xi., the twelfth of Book xlvii. and the Codex ix. 19.

other wished his family to be buried with him; S. E. F. S. Sibi et familiæ suæ. Another destined it to the use of his heirs; S. E. H. S. Sibi et Hæredibus suis. Another H. V. S. F. Hoc vivus sibi fecit; or S. P. F. Sua pecunia fecit; and a very common inscription records the erection by the heirs in compliance with the will of the deceased, H. E. T. P. Hæredes ex testamento posûere. In some instances the price paid for the spot was named; and in very many its exact dimensions;—In fronte viii. pedes; in agro viii. pedes.—In fronte viii. pedes; in agro xvi. pedes In later times, in the catacombs, the description is occasionally given by the number of bodies the purchased ground could contain. Somum, Bisomum are the most common, but even Trisomum and Quadrisomum occur — being space for one, two, three, or four bodies.

It was not uncommon for the testator to fix the time within which his tomb was to be erected, and this was considered to be absolutely binding on the heirs, unless it happened to be an impossible condition. "Si quis ita institutus sit, si monumentum post mortem testatoris in triduo proximo mortis ejus fecisset, cum monumentum in triduo perfici non possit, dicendum erit conditionem evanescere quasi impossibilem."*

Laws restraining funeral expenses continued to be made down to a late period of the Empire. It was enacted in general terms, that the expense of a funeral should not be beyond the rank and fortune of the deceased—"nec voluntatem sequendam, si res egrediatur justam sumptus rationem."† The burying of valuable ornaments with the body was strictly forbidden; "non autem oportet ornamenta cum

* Dig. xxviii. tit. vii. c. 6, and see also Dig. xxviii. tit. v. c. 44.

† Dig. xi. tit. vii. c. 14, § 6.

corpore condi nec quid aliud hujusmodi quod homines simpliciores faciunt."* It was on these points that the authority of the Ædile became available.

If we wish to realize to ourselves the Roman idea of a splendid funeral, we shall find it in Virgil's description of that of Misenus, in which every one of the sumptuary laws we have quoted seems to be deliberately violated.

"Principio pinguem tædis et robore secto
Ingentem struxêre pyram; cui frondibus atris
Intexunt latera, et ferales ante cupressos
Constituunt, decorantque super fulgentibus armis.
Pars calidos latices et ahena undantia flammis
Expediunt; corpusque lavant frigentis et unguunt.
Fit gemitus: tum membra toro defleta reponunt,
Purpureasque super vestes, velamina nota,
Conjiciunt. Pars ingenti subiêre feretro
Triste ministerium; et subjectam more parentum
Aversi tenuêre facem; congesta cremantur
Thurea dona, dapes, fuso crateris olivo.
Postquam collapsi cineres, et flamma quievit,
Reliquias vino et bibulam lavêre favillam
Ossaque lecta cado texit Chorinæus aheno." †

If we wish a description of a funeral of the most opposite description, we shall find it in Horace —

"Anus improba Thebis
Ex testamento sic est illata: cadaver
Unctum oleo largo nudis humeris tulit hæres,
Silicet, elabi si posset mortua." ‡

The law which prohibited burying within the city was observed with less strictness in Rome than in Athens —

* Dig. xi. tit. vii. c. 14, § 5.

† Æneid, Lib. vi. 214–228.

‡ Horat. Satyr, Lib. ii. v. 83.

the Vestal Virgins, as superior to the laws, were exempted — and a few persons who had rendered eminent service to the State, had tombs within the walls assigned to them, as the highest honour their fellow-citizens could confer, as Publicola, Posthumius Tubertus, Fabricius, and a few others. The Emperor Trajan may be reckoned among those buried within the walls, for his ashes were deposited in a golden globe, in the hand of his statue, erected on the summit of the sculptured pillar in his Forum.

But as the general rule, wherever a tomb occurs, it is a proof that the spot was not within the city walls at the time of its erection; and this argument is admitted by the writers on antiquities as at once conclusive.

The Romans employed many different words to express the various kinds of tombs — some of which it will be convenient to remember.

Monumentum applies to every sort of tomb.

Memoria latterly had the same meaning.

Sepulchrum — Where a dead body was buried, but not burned.

Tumulus — A sepulchre with a mound over it.

Bustum — When erected on the site of a funeral pile.

Ustrinum — A place where bodies were burned.

Conditorium — A place where bodies were deposited.

Columbarium — A place where ashes were deposited, either with or without vases.

Ipogeum — A subterraneous sepulchre.

Cenotaphia — A monument where neither ashes nor body were deposited.

Cippus — A truncated column on the actual grave.

Sarcophagus — A stone chest in which the body was placed.

Ara Sepulchralis — A stone in form of an altar with the name of the dead.

Area Sepulchralis—A spot appropriated to funerals whose boundaries marked by termini.

Mausoleum—The most splendid kind of tomb.

Puticulæ—Small pits dug in the earth, like our modern graves, and employed principally for the poor.

The Romans do not appear ever to have adopted the plan of placing in the grave, or sarcophagus, painted vases of terra cotta, with or without food, trinkets, and jewels, so prevalent in Magna Græcia and Etruria. They were not ignorant of the practice, for the tombs of their predecessors were carefully sought out by them and rifled of their contents, as is often found to be the case, to the dismay of modern excavators.

We may, on the whole, safely regard burying as occasionally practised, but burning as the ordinary mode of disposing of the dead, from the earliest historical period of Rome down to the commencement of Christianity, when burying began to prevail; and with its full establishment as the religion of the State, burning seems to have wholly ceased. The Christian, looking forward to the resurrection of the flesh, naturally revolted from the practice of reducing it to ashes, ready to be blown about by the passing breeze, or scattered and disturbed by careless hands. He sought a quiet resting-place where the dead might repose in peace until awakened by the last trump; and a kindly feeling, tinged with somewhat of error, made them abstain from placing more than one body in one grave; as is fully proved by the single skeletons almost invariably found in the Catacombs—the great burying places of the early Christians, as well as their places of refuge in times of persecution.

Some inscriptions in the Catacombs evince great anxiety to prevent the disturbance of the dead, even to a rather

blameable extent—as shown by an inscription given by Maitland from Arringhi.

> "Male pereat insepultus
> Jaceat, non resurgat,
> Cum Judâ partem habeat,
> Si quis sepulchrum hunc violaverit."*

This inscription is not of early date, but "towards the middle ages, when even this remnant of Paganism found its way into Christianity."

Both bodies and ashes were disposed of in different manners.

The lower classes, mostly slaves, unless when admitted into the family sepulchres of their masters, were deposited, whether buried or burned, in simple graves dug in the earth. Their principal burying-place during the Republic, was on the Esquiline Hill, outside the Agger of Servius, occupying the large level space from the Agger to the present City walls, and extending from the Porta San Lorenzo, towards the arch of Gallienus and the Church of San Antonio.

In the reign of Augustus, Mæcenas got possession of the district, and converted the burying-ground into a luxurious garden; a singular proof of the utter contempt with which the Roman Patrician regarded the lower orders — of how they considered them as *res* and not *personæ*. They did not even admit their remains into the same public cemetery with themselves, and they counted them entitled to no respect. It may well be doubted if the powerful favourite of the Emperor would have dared to violate the tomb of one knight or senator, in order to embellish his villa or his gardens.

* Maitland, p. 81.

His friend Horace greatly rejoices in the change thus made on the Esquiline.

> "Huc prius angustis ejecta cadavera cellis,
> Conservus vili portanda locabat in arca.
> Hoc miseræ plebi stabat commune sepulchrum,
> Pantolabo scurræ Nomentanoque nepoti.
> Mille pedes in fronte, trecentos cippus in agrum
> Hic dabat; Hæredes monumentum ne sequeretur.
> Nunc licet Æsquiliis habitare salubribus, atque
> Aggere in aprico spatiari, quo modo tristes
> Albis informem spectabant ossibus agrum."*

Of these common graves no traces now remain either on the Esquiline or elsewhere.

Of the tombs whose remains are still to be seen, some are underground. Those of them near Rome at least, were usually not excavated for the purpose, but were ancient quarries, whence either Tufo or Terra pozzolana had been taken for building, altered and modified for the new purpose to which they were applied. Of such, the tomb of the Scipios, and the various Catacombs are examples.

Another style of underground tomb is the Columbarium — a rectangular apartment usually of moderate dimensions, and so arranged as to contain the ashes of hundreds of individuals in a small space. The name is derived from that of a pigeon house, from the similarity of the arrangements; each wall has from three to six or eight rows of niches, and each niche has one or two or three loculi for vases; so that an apartment of twenty feet in length by fifteen in width and ten in depth can contain the remains of from six to eight hundred persons, and that with much neatness, and the almost entire absence of every thing offensive.

* Satyrarum, Lib. I. viii. 8.

During the Empire, Columbaria wholly above ground were perhaps more common than subterraneous, and these were of every form, and not unfrequently made part of a villa, or stood in the gardens of the family residence.

The style of tomb which may be considered the model or type of those of the first class during the Empire consisted of a basement of masonry, from the centre of which rose a circular tower, which was fitted up either to receive one or two individuals, or to contain the remains of successive generations.

The tombs which were placed in the gardens of villas were few in number compared with those which stood on each side of the principal roads. It is clear that the Via Appia was for ages the fashionable burying-place; for, independent of the allusions in ancient writers, we find even now remains, more or less entire, of innumerable sepulchres on either side, extending from the walls as far as to Albano, and although not now exactly contiguous, still at no great distance from each other, and distinctly marking the line of the road. Probably at one time they were as close together for miles as in the short street of tombs which leads from the House of Diomedes to the Gate of Pompeii.

Though the sides of the Via Appia be the most crowded cemetery, yet many tombs occur on all the other roads, particularly the Via Latina, the Via Prænestina, and the Via Nomentana.

It is worth remembering, that though the tombs were placed near the great roads, the principal entrance *never* fronted them, but was invariably from some side path (diverticulum), lest a Flamen passing by should be polluted by his eyes resting on a dead body.

The tomb of the Scipios is the oldest now extant in Rome, situated in the Vigna Sassi, within the present Walls, and

about half a mile from the Porta San Sebastiano, fixing by its position the farthest point to which the Walls of Servius Tullius could have extended. Very near to it, all antiquarians admit, must have been the ancient Porta Capena.

From an allusion by Cicero, it was known that the Scipios were buried on the Appian Way; "an tu egressus porta Capenâ cum Catilini, Scipionum, Serviliorum, Metellorum sepulchra vides, miseros putas illos ?"* Various tombs were assigned to them from time to time, but on no better ground than that they stood on the Appian Way. Even the discovery of one of the monumental slabs in the year 1616, which is now in the Barberini Palace, failed to draw attention to the spot; and it was not until the proprietor of the vineyard set to work to enlarge his cellars in 1780 that the actual tomb was discovered. Its contents at once put an end to farther controversy on the subject, and it is now known over all Europe by the miniature models of the sarcophagus of Lucius Scipio Barbatus found in it.

Both Cicero and Pliny record the fact that the Scipios did not burn, but buried their dead. "Gentemque Corneliam usque ad memoriam nostram hac sepulturâ scimus esse usam."† The tomb is an Ipogeum; the level of the floor is several feet above the level of the Via Appia, and the tomb extends back into the steep slope of the Cœlian Hill, so as to be at some depth below the surface of the earth at its farther extremity.

From its appearance it is clear that it was originally a quarry of Tufo before the Scipios employed it as a tomb. It is nearly square, and the walls consist partly of the native rock, and partly of brick employed to sustain the

* Quest. Tusculanæ. i. 7.

† Cic. De Legibus, II. 22. Pliny, Hist. Nat. VII. 54.

crumbling sides. The present *modern* entrance fronts the Via Appia, but the original doorway entered from a path which led from the Via Appia to the Via Latina and is seen inside the tomb. The internal dimensions are about 32 feet by 28 feet, but irregular, and part of the native rock still remains in two blocks in the middle, so that it has more the appearance of a small catacomb than of the tomb of a great family; and it proves either that luxurious splendour was not generally introduced when even the Scipios had so plain a resting-place, or that their taste was simple.

The original entrance has a very Etruscan look about it. It is composed of nine rude blocks of Peperine. Within the tomb were found ten or twelve sarcophagi. Some wholly, some half inserted in the walls, and some standing detached on the floor; and there are several recesses for sarcophagi which never were occupied, and one small niche either for an infant or a funerary urn.

The sarcophagi are all of Peperine, of the hard Albano variety, and over each was placed in the wall an inscription naming the occupant; most of them were slabs of Peperine, with the inscription very slightly cut and coloured with red pigment; one or two were of Travertine, and one of marble.

Besides these were found a bust in Peperine of a laurelled head, supposed by some to be that of Ennius, from Livy's statement. "In Scipionum monumento tres statuæ sunt, quarum duæ P. et L. Scipionum dicuntur esse, tertia Poetæ Q. Ennii;"* but it is obvious that the laurel crown was as suitable to either of the Scipios as to Ennius; the bust represents a grave, intellectual countenance, but some-

* Lib. xxxviii. c. 56.

how does not convey to us our *idea* of old Ennius. There was also found a gold ring with a Cornelian, bearing an image of Victory, and a marble bust unknown.

It is much to be deplored that the whole contents of this tomb were dispersed—not one thing being left in its place. The sarcophagi, inscriptions and busts, were removed to the Vatican; the ring, which probably was worn by one of the Scipios, passed into private hands, and the bones of old Barbatus, which had escaped the ravages of Goths and Gauls and Vandals, were removed by a zealous antiquarian (Quirini), and deposited in a tomb erected for the purpose in his villa near Padua. Fac similes of the inscriptions have been put up in the original places.

None of the sarcophagi were more than plain stone coffins except that of Scipio Barbatus. It is about 10 feet long, 5 high, and 4 feet wide; the upper two-fifths of the front are occupied by a beautiful doric frieze with seven triglyphs and six metopes; each metope having a flower of a peculiar form. Above the frieze is a toothed cornice, and on this rests the lid with the simple inscription

L. CORNELIO. CN. F. SCIPIO.

And below the inscription is a staff, each end being bent, supposed to represent an Augur's rod, and terminating in an ornament very closely approaching to an Ionic Volute. Instead of farther details a model is produced, formed of the same stone with the original, and executed with considerable accuracy.

The inscriptions found in this tomb are the oldest certain remains of the Latin language; for we cannot depend on the fragments of the Laws of the Twelve Tables being now in their original state, and they have accordingly been the subjects of much critical investigation by

Lanzi * and others. Some of them may interest the members of the Institute, to whom they will present Latin in a very different form from what is found in the pages of Cicero or Virgil.

The inscription on the sarcophagus of Barbatus is as follows —

CORNELIUS. LUCIUS. SCIPIO. BARBATUS. GNAIVOD. PATRE. PROGNATUS. FORTIS. VIR. SAPIENSQUE.—QUOIUS. FORMA. VIRTUTEI. PARISUMA. FUIT.—CONSOL. CENSOR. AIDILISQUE. FUIT. APUD. VOS. TAURASIA. CISAUNA. SAMNIO. CEPIT. SUBIGIT. OMNE. LOUCANA. OPSIDESQUE. ABDOUCIT.

That of his son, Lucius, contains more Archaisms than his fathers —

HONC. OINO. PLOIROME. CONSENTIONT. R,
DUONORUM. OPTUMO. FUISE. VIRO.
LUCIOM. SCIPIONE. FILIOS. BARBATI.
CONSOL. CENSOR. AIDILIS. HIC. FUET. A(pud vos)
HEC. CEPIT. CORSICA. ALERIAQUE. URBE.
DEDET. TEMPESTATEBUS AIDE. MERITO.

Lucius, son of Scipio Asiaticus — Quæstor A. R. 586.

L. CORNELI. L. E. P. N.
SCIPIO. QUAIST.
TR. MIL. ANNOS.
GNATUS. XXXIII.
MORTUUS. PATER.
REGEM. ANTIOCO.
SUBEGIT.

That of the young L. Cornelius is highly flattering, and the language of it approaches to that of the classic age.

* De Lingua Etrusca, i. 114, &c.

L. CORNELIUS. GN. F. GN. N. SCIPIO. MAGNA. SAPIENTIA.
MULTASQUE. VIRTUTES. ÆTATE. QUOM. PARVA.
POSSIDET. HOC. SAXSUM. QUOI. EI. VITA. DEFECIT. NON.
HONOS. HONORE. IS. HIC. SITUS. QUEI. NUNCQUAM.
VICTUS. EST. VIRTUTEI. ANNUS. GNATUS. XX. . . . IS
T . . . . . EIS. MANDATUS. NE. QUA. IRATIS. HONORE.
QUEI. MINUS. SIT. MANDA . . . . . .

That of Gn. Scipio Hispanus is very boastful —

GN. CORNELIUS GN. F SCIPIO HISPANUS
PR. AID. CUR. Q. TR. MIL. II. X. VIR. S. L. JUDIK X. VIR SAC. FAC.
VIRTUTES. GENERIS. MIEIS. MORIBUS. ACCUMULAVI.
PROGENIEM. GENUI. FACTA. PATRI. SPETIEI
MAJORUM. OBTENUI. LAUDEM. UT. SIBEI. ME. ESSE. CREATUM.
LAETENTUR. STIRPEM. NOBILITAVIT. HONOR.

It is supposed that this Scipio was grandson of Africanus and Prætor, A. R. 614.

Of the great Scipio Africanus, no memorial was found. His epitaph was written by Ennius, and has been preserved by Seneca, but in the language of his own times.

Hic est ille situs cui nemo civis neque hostis
Quivit pro factis reddere opræ pretium.*

After the extinction of the house of the Scipios, the tomb appears to have passed into the possession of other families; for various inscriptions regarding unknown individuals were found in it; and in still later times a second storey was erected, of which traces may be seen, especially a fragment of a fluted pillar of peperine, coated with very fine cement to resemble marble, and evidently of the time of the Empire.

* Epist. Lib. xix. Epist. 109.

There is little in the tomb itself deserving of notice, in an architectural point of view; but it is deeply interesting as the memorial of one of the greatest and best of the families of Rome, and as one of the few remains of the Republic which cannot be disputed.

Barbatus was consul A. R. 456, B. C. 296, and was great grandfather of Scipio Africanus and Scipio Asiaticus.

The tomb of Bibulus — This monument, which stands at the foot of the Capitol, on the Via Flaminia, at the bottom of the Via Marforio, is probably next in age to that of the Scipios. It is proved to be of the time of the Republic by the inscription; but history has not recorded the deeds by which he earned his tomb. The name of Bibulus was not uncommon — occurring specially in the Sulpician and Calpurnian families — and one of them was the Ædile who vehemently attacked the Consul Marcellus, and the whole nobility, as recorded by Livy* and by Plutarch in Marcello, who characterizes him as "δεινον ειπειν ανδρα και βιαιον," an eloquent and ferocious man; and it is not unlikely that this tribune was the grandfather or father of the Bibulus to whom this monument was erected — one of a popular family of hereditary inveighers against the aristocracy.

The monument is important as fixing the site of the Walls at this point — for beyond them it must have been. It consists of two storeys, and now forms part of the wall of a dwelling-house, the greater part of the lower storey is buried up in the earth, and the inscription is raised by only one stone and part of another above the level of the

* Inimicus erat ei C. Publicius Bibulus, tribunus plebis — Lib. xxvii. c. 20.

Accusavitque tribunus plebis non Marcellum modo sed omnem nobilitatem — Lib. xxvii. c. 21.

modern pavement. The lower portion is a plain wall of square blocks of Travertine, on five of which the inscription is cut.

The upper storey is of very plain Doric, having in front four pilasters, one of which is still almost entire. Between the two middle pilasters is a large opening, and traces of ornaments of other two are to be seen on each side, and the whole was surmounted by a frieze, with the favourite ornament of the bull's head, supporting wreaths of leaves and flowers.

The front extends about 20 feet in length, and the height from the present pavement to the top of the cornice is about 26 feet. If any of the interior arrangements still exist, they are entirely concealed by the modern dwelling. The inscription proves the popularity of Bibulus —

C. POBLICIO L. F. BIBULO AED. PL. HONORIS
VIRTUTISQUE. CAUSA. SENATUS.
CONSULTO. POPULIQUE. JUSSU. LOCUS.
MONUMENTO. QUO. IPSE. POSTEREIQUE.
EJUS. INFERRENTUR. PUBLICE. DATUS. EST.

The tomb of Cæcilia Metella is another ruin of the Republic, but towards its close, and showing by its style more of Imperial splendour than of Republican simplicity. It stands on the west side of the Via Appia about two miles from the gate of San Sebastiano, and is among the most entire of the tombs.

Crassus, the husband of Cæcilia, died B. C. 53, A. R. 700, or nine years before the death of Cæsar, and the tomb was probably erected during his life. It consists of an extensive square basement of rubble work, strengthened by long key stones or diatoni of Travertine, and which probably had

a covering of dressed stone. It is of unequal height to bring the base to a level; above this rises the tower, of simple design and beautiful proportions. It is 64 feet in diameter, and 32 in height to the top of the cornice, above which are the remains of a wall of large stones, which apparently supported a dome rising over all, but of which no part remains, except some slight traces of the springing of the vault. The mass of the tower is brick, but the outside is of large blocks of Travertine, beautifully cut and built, the edges of each stone being bevelled.

The cornice is also of Travertine, having a row of bull's heads, supporting festoons of leaves and flowers, and hence its popular name of Capo di Bove. The inscription alone is in marble—

CAECILIAE.
Q. CRETICI. F.
METELLAE, CRASSI.

a model of classical simplicity.

The Tower had two small sepulchral chambers, one above the other. The lower chamber was opened by Paul III., A. D. 1540, and a coarse marble sarcophagus without an inscription found in it, which is now in the court of the Farnese palace; it is evidently of much later date than the tomb itself.

The upper room is now open, nearly on the level of the Via Appia, and in it probably was deposited the body of Cæcilia Metella. It has a conical roof; the diameter of either room is 15 feet, so that the walls are of the immense thickness of nearly twenty-five feet.

This massive building was much prized as a fortress in the time of the wars of the Roman barons. It was taken possession of by the Gaetani about A. D. 1300, and long held

by them. Besides erecting walls of defence to some distance from the Tower, they built adjoining to it a palace and a church, of which the ruins only exist.

The Tower itself is so substantial, that it has suffered less than almost any other monument in Rome; and Crassus has completely succeeded in his object of handing down the name of himself and his wife for nearly twenty centuries. From the summit the view is peculiarly fine, looking down on the adjacent Circus of Romolus, the long vista of tombs on each side of the Appian Way, and the ranges of arches of the broken aqueducts stretching in various directions across the Campagna. Very near may be seen an extensive basement, on which another similar tomb had been erected; but the whole materials were probably used for the buildings of the Gaetani.

One or two other tombs, or rather traces of them, might be named as perhaps of the age of the Republic; but they cannot be made matter of interest except to the zealous antiquarian.

Of the sepulchres of Imperial Rome many exist, but few so perfect as to enable us to ascertain their plan with certainty.

The tomb of Caius Cestius is the oldest and the best preserved — a pyramid coated with coarse white marble (Thasian) now part of the city wall, and marking the Protestant burying ground. It is a standing proof of how well suited the form of a pyramid is for a durable monument— neither the assaults of time nor of man have had very much effect on this building—which, having been slightly repaired by Pope Alexander VII., about 1660, now stands nearly as when first erected. It was long popularly called the Tomb of Remus, and as such Petrarca alludes to it in one of his

letters, in spite of the inscription in honour of Cestius in letters of nearly 2 feet long! *

The pyramid stands on a base of Travertine 3½ feet high. It is rectangular, each side nearly 100 feet and the height 130. The walls are 30 feet thick at the level of the floor, and enclose a single sepulchral chamber 22 feet long, 15 feet wide, and 16 feet high.

The walls of the chamber are coated with very fine plaster, and were adorned with arabesque paintings, executed in superior style, of which engravings have been preserved by Falconieri and others — but the discoveries in Pompeii and other places have greatly diminished their importance, and now they can hardly be traced; they have partly faded away, and are partly obscured by the smoke of the torches of visitors.

The inscription informs us, that this pyramid was erected in 330 days, or about eleven months, as appointed by Cestius in his will; and few buildings erected so rapidly are likely to stand so long.

The following inscription is engraved on the south-east side of the pyramid—that is, on the side towards the Campagna.

C. CESTIUS. L. F. POB. EPULO. PR. TR. PL.
VII. VIR EPVLONUM
OPUS. ABSOLUTUM. EX. TESTAMENTO.
DIEBUS. CCC.XXX. ARBITRATU.
PONTI. P. F. CLA. MELAE HAEREDIS.
ET POTHI. L.

On the opposite side, that towards Rome, the first two lines of the above are repeated.

* Falconieri, p. 11.

Nothing is known of Cestius beyond what is stated in the inscription on his tomb. He was Septemvir of the Epulones, whose duty it was to prepare the solemn feasts for Jupiter and the other gods at the Lectisternia—an office of considerable importance and dignity—these feasts being only held in gratitude for an important victory, or in dread of an impending calamity.

On the west side, in front of the pyramid, stand two small fluted pillars, which the excavations of Alexander VII. brought to light; as also two bases, on one of which stood a bronze statue of Cestius, of which one foot is now in the Capitoline Museum. The inscriptions on this base prove, that Cestius lived in the time of Augustus, and they throw light on several circumstances connected with the manners of the age.

M. VALERIUS. MESSALA. CORVINUS.
P. RUTILIUS. LUPUS. L. JUNIUS. SILANUS.
L. PONTIUS MELA. D. MARIUS.
NIGER HEREDES. C. CESTI. ET.
L. CESTIUS. QUAE. EX. PARTE. AD.
EUM. FRATRIS HEREDITAS.
M. AGRIPPAE MUNERE. PER
VENIT. EX. EA PECUNIA. QUAM
PRO SUIS. PARTIBUS. RECEPER.
EX VENDITIONE ATTALICOR.
QUAE. EIS. PER. EDICTVM.
AEDILIS IN SEPVLCRVM.
C. CESTI EX TESTAMENTO.
EIVS. INFERRE. NON. LICUIT.

Several of the names of the heirs, especially that of Agrippa, are those of persons well known in the history of the reign of Augustus.

From the expressions in the fifth, sixth, and seventh lines, it appears that Caius Cestius had taken the precaution of naming Agrippa as one of his heirs, in order thereby to secure to his brother Lucius the protection of so important a personage, and that it was from him his brother obtained his portion of the inheritance — we may believe after suitable taxation.

From the concluding part of the inscription, line 8 to end, we learn that the expense of the monument was defrayed by the sale of the Attalian dresses belonging to Cestius, and which the Ædile, enforcing in this instance the laws already quoted, had prohibited to be placed in his tomb.

The term Attalian or Attalic robes, is applied by ancient Roman writers to every description of rich and costly dresses, and it arose from their first acquaintance with them when the Roman people became the heirs of Attalus III. king of Pergamus, from which inheritance a vast amount of wealth and luxury was suddenly imported into Rome about A. R. 615; but for which a heavy price was paid, if we be correct in attributing, as we are inclined to do, the turbulence of the Gracchi and the attendant tumults of the populace to disputes arising, in the first instance at least, from the endeavours of each citizen to obtain a personal share of the vast inheritance.

Attalic robes were used both for dress and for furniture, and they were composed in great part of gold — probably partly woven of golden threads, and partly adorned with plates of the metal and precious stones fixed upon them. It is reported that when the tomb of Mary, the wife of the Emperor Honorius was opened — when Julius II. added to the buildings of St. Peter's in the beginning of the sixteenth century — her ashes were found wrapped up in such robes, and from the tunic and head-dress no less than forty pounds of the purest gold were extracted.

The tomb of Augustus may be regarded as next in point of age to that of Cestius.

It was erected by Augustus in his sixth consulate A. R. 726 (B. C. 29), and had its name Mausoleum from rivalling in extent and grandeur the tomb of Mausōlus, king of Caria, one of the seven wonders of the world.

Suetonius states, that it stood betwixt the Via Flaminia and the Tiber, precisely where we now find its ruins; and that it was surrounded by shrubberies and walks open to the public.

Augustus died at Nola, and his body was brought from thence to his mausoleum. . . . . "Reliquias legerunt . . . . ac in Mausoleo condiderunt. Id opus inter Flaminiam viam ripamque Tiberis sexto suo consulatu extruxerat circumjestasque silvas et ambulationes in usum populi tunc jam publicârat"*

Strabo, the geographer describes it as by far the finest of the buildings in the Campus Martius of white stone, covered with evergreen trees, on the summit a bronze statue of Augustus, and within the tombs of the emperor, his relatives and friends, and behind an extensive grove with admirable walks.†

What now remains is a large mass of brick work, and Tufo cut in the form of bricks, so encumbered by modern buildings that it is scarcely possible to trace the arrange-

* Sueton. Lib. ii. c. 100, p. 288.

† "Αξιολογωτατον δε το Μαυσωλειον καλουμενον, επι κρηπιδος ύψηλης λευκολιθου προς τω ποταμω χωμα, αχρι κορυφης τοις αειθαλεσι των δενδρων συνηρεφες. επ' ἄκρω μεν ουν εικων εστι χαλκη του σεβαστου Καισαρος. ὑπο δε τω χωματι, θηκαι εισιν αυτου, και των συγγενων και οικειων. οπισθεν δε μεγα' ἄλσος περιπατους θαυμαστους εχον—"

Strabo, Lib. v. p. 361.

ment, farther than that we find a great tower, of which the upper part seems to have formed one large circular apartment, probably covered by a dome, and the lower part to have contained ten or twelve smaller sepulchral chambers; the whole probably resting on a raised basement.

The best view of it is from the court of the Palazzo Valdambrini, in Via Ripetta, or from the Palazzo Corea, in Via dei Pontefici. The brick work which remains is about 220 feet in diameter, and the great centre chamber 130 feet. The brick work is very excellent, partly laterizia, partly reticulata. No trace is now to be seen of the external coating, which was of stone or of marble. The highest parts of the ruins rise to about 35 feet above the present level of the ground.

Many attempts have been made, with little success, to make out the original plans and elevations from the notices of Suetonius, Diodorus, Strabo, and the ruins themselves. One of the most probable is that of Donatus,* who makes it to have had four storeys, one rising above the other, of diminishing size, so as to give space for Strabo's evergreens — and the whole surmounted by the bronze statue of Augustus.

The entrance was to the south, fronting the Tiber, and turned away from the Via Flaminia, and on either side of it stood an Egyptian obelisk of red granite, one of which is now on the Quirinal, and the other at Santa Maria Maggiore.

Besides Augustus himself, we read of many of the members of the Imperial family being buried here, among whom was the youthful Marcellus, on the day of whose funeral the Tiber overflowed its banks, so as to inundate the mausoleum.

* Apud Græv. III. p. 814.

——— "Vel quæ, Tyberine, videbis
Funera, cum tumulum præterlabêre recentem!"*

The like circumstance is also noticed in the beautiful epistle to Livia, on the death of Drusus, by some attributed to Ovid, but more probably the composition of Pedo Albinovanus —

"Ipse pater flavis Tiberinus inhorruit undis
Sustulit et medio nubibus amne caput.
* * * * *
Jamque rogi flammas extinguere fluminis ictû
Corpus et intactum tollere certus erat."

Pedo also alludes to the very frequent funerals which took place in it immediately after its erection —

"Vidimus ereptam mærentem stirpe sororis
Luctus, ut in Druso, publicus ille fuit.
Condidit Agrippam, quo te, Marcelle sepulcro
Et cepit generos jam locus ille duos
Vix posito Agrippâ tumuli bene janua clausa est
Perfecit officium funeris ecce soror.
Ecce ter ante datis jactura novissima Drusus
A magno, lacrymas, Cæsare, quartus habet
Claudite jam, Parcæ, nimium reserata sepulcra,
Claudite — plus justo jam domus ista patet."

Tacitus describes the deep grief which was felt by the whole Roman people on the day when the remains of Germanicus were deposited in the tomb of Augustus. "Dies quo reliquiæ tumulo Augusti inferebantur, modo per silentium vastus, modo ploratibus inquies . . . concidisse rempublicam, nihil spei reliquum clamitabant."†

* Virgil, Æn. vi. 871.

† Tac. Ann. iii. 4.

Here, too, were buried Agrippa, Livia, Claudius, and probably most of the members of the Imperial family, down to the time of Claudius, of whom Seneca jestingly says—"inter Tiberim et viam rectam descendit ad inferos." The two Julias, daughter and granddaughter of Augustus, were by his will expressly excluded from his tomb.*

We cannot then err in associating this ruin with many of the greatest names in Roman history; and what is it now? The great sepulchral chamber is converted into an arena for bull fights and fireworks, much frequented by the Roman populace, and the smaller chambers of the lower floor are converted into stables and cowhouses.

The building seems to have stood entire for many centuries. It was occupied as a fortress by the Colonna family for ages; but at last their oppressions roused the Romans against them, and after a violent assault, it was taken in 1167, and completely dismantled.† Since that time it has been gradually reduced to its present ignoble use.

Excavations in 1777 discovered the site of the imperial Ustrinum, where the bodies were burned, lying betwixt the Mausoleum and the Via Flaminia, and nearly corresponding with the Piazza di San Carlo al Corso. Various blocks of Travertine were found bearing names of members of the Augustan family, with the words, "Hic crematus est," which are now preserved in the Vatican Museum.

The Ustrinum appears to have been of considerable extent, paved with stone or marble, surrounded by an iron railing, and adorned by rows of poplar trees.‡ After a body had been consumed on the funeral pile, the ashes were

* Suet. in Vita Augusta, c. 101.

† Villani, Storia Fiorent, v. i.

‡ Strabo, lib. v. p. 361.

carefully collected and placed in an urn; and in order to preserve them safe and pure, a winding-sheet of asbestos was sometimes employed by the wealthy — one of which containing the ashes is preserved in the Vatican Library.

The tomb of Hadrian stands on the opposite side of the Tiber; it is by far the largest of the Roman tombs; and from its situation the most imposing. It is now best known by its modern name of the Castle of St. Angelo; and though besieged and taken on many different occasions, and greatly incumbered by modern fortifications, and by a whole village of buildings on the summit, a large part of the original work, despoiled however of all its ornaments, still remains.

The Emperor Hadrian was a great traveller. He is said to have visited every province of the Empire; and whatever judgment we may form of his character in other matters, he is entitled to be regarded with special respect by this Institute, as being himself a practical architect. He furnished the plans for this mausoleum, for the temple of Venus and Rome, and for his enormous villa at Tivoli; and he caused the erection of many other buildings in Rome, as well as in the provinces — not neglecting among them to erect a wall to protect the borders of the Roman Empire from the inroads of our warlike forefathers.

Hadrian then having a taste for architecture, and having the whole wealth of the Empire at his command, we may expect, that in designing a tomb in honour of himself, his resources would be employed with no sparing hand.

It was erected about A. D. 130, A. R. 882, partly in rivalry of that of Augustus, and partly because the tomb of Augustus was so full, that there was no more room to bury in it; "Nam Augusti Mausoleum plenum erat in quo nemo

amplius sepultus est."* Spartian, in his life of Hadrian, also mentions its erection, "Fecit et sui nominis pontem, et sepulcrum juxta Tiberim."†

The general plan of the tomb was that which we have already noticed as the type of the finest Roman sepulchres—a square basement, from the centre of which rose a lofty tower.

The basement still exists, and may be partially traced, though mostly buried among the bastions and ravelines of Pope Urban VIII. It is square, and measures 253 feet on each side, and therefore covers in all nearly an English acre and a half.

The tower, even in its diminished state, is 188 feet in diameter. It is composed of solid brick masonry, not rubble work, and the brick work was covered with a coating of dressed Travertine; and this again by a coating of white marble. Of this last no trace remains, but part of the Travertine is still seen on the side next the Tiber, with the holes for metal bolts by which the marble was attached; the greater part of the building shows only the interior brick building.

Procopius gives us a distinct account of it in his days—"The tomb of the emperor Hadrian is situated outside the Porta Aurelia, about a stone's throw from the Walls, well worthy of our consideration, for it is built of Parian marble, of square blocks, fitting close together without any cement, having four equal sides about a stone's throw in length, and loftier than the city walls. On the summit are statues of men and horses of Parian marble and wonderful workmanship."‡ The same writer adds, that when hard pressed by

* Dion. Cassius, Lib. 69.

† Spart. Vita Hadr. c. 19.

‡ Procop. de Bello Got. B. I. c. 100, p. 282.

the Goths, the soldiers under Constantianus, to whom Belisarius had intrusted the defence of the tomb, dislodged these statues, and throwing them, partly entire and partly in broken fragments, on the heads of their assailants, succeeded in repulsing them.*

This was the first commencement of its despoliation, about A. D. 550, after it had stood entire upwards of four centuries; for although made by Honorius part of the city walls, A. R. 400, it does not appear that he in any way injured it by so doing. The account of Procopius has been remarkably confirmed in modern times by the discovery, in forming the ditches of the present fortress, of many fragments of these statues, and some even entire — as the beautiful Barberini Faun, now in Munich, and the dancing Faun in Florence.

The statue of Hadrian, in a chariot drawn by four horses, is said to have ornamented the summit; and the splendid marble columns, which till lately adorned the Church of St. Paolo fuori le Mura, are said to have been taken from it.

Besides these statues and columns, many other valuable antiquities have been found in or near it — such as the sarcophagus of large grained granite, now in the Vatican; the basin of red porphyry, which is used as the baptismal font in St. Peter's, and an urn of the same material, forming part of the tomb of Pope Innocent II.

It is thus clear, both from the notices of ancient writers and from what still remains, that the tomb of Hadrian was in every way worthy of the taste and wealth of the emperor.

It was approached from Rome by the Pons Ælius, built for the purpose at the same time with the tomb. The entrance was by a gate fronting the bridge, still to be seen

* Procop. de Bello Got., B. I., c. 100.

within the fortress, and from this a spiral passage 11 feet wide and 30 feet high led up to the sepulchral chambers. This passage was paved with Mosaic, and lined with costly precious marbles, of which fragments still remain; the sepulchral chamber is about 25 feet square, the walls of it being of enormous thickness, and there are smaller side apartments, probably also used for the same purpose, for all the members of the Antonine family were buried here. It is however nearly impossible to make any accurate examination of its arrangements, for the summit is completely covered by modern buildings, and the whole is used partly as a fortress and partly as a state prison — to which, of course, it is not easy to obtain access.

The history of this monument, from the days of Procopius down to the present times, is nearly the history of the various revolutions of Rome. It has been taken and retaken times without number. At the beginning of the tenth century, it was held by the Counts of Etruria, and soon after passed into the hands of the infamous Theodora and her yet more abandoned daughter, Marozia. The first pope who got possession of it was John XII. in 956; but it was taken from John XVI. by the Roman noble Crescentius in 975, and held by him for eleven years, and it long retained his name. In 1084, we find it the refuge of Gregory VII. during the ravages of the Normans; afterwards it was possessed by the Countess Matilda, the foundress of the temporal dominion of the popes. In the fifteenth century it was taken by Ladislaus, King of Naples, but soon restored to the Church. Alexander VI., in 1500, connected it with the Vatican by the covered gallery 3000 feet in length, which still remains; and he had scarcely completed his work, when he had to retire to it as a place of safety, when the troops of Charles VIII. of Naples took

possession of the city. Pope Urban VIII. built the modern fortifications we now see, and took from the Pantheon the bronze beams of the portico, to make 100 cannon for their defence, upon which Donatus, the Jesuit, jestingly remarks*—"Bees truly not only make honey, but are also armed with stings for the battle, like those who from their exalted station have poured down upon the people the liquid sweetness of *Urbane* wisdom, and may also by their steady courage strike terror into those who provoke them." The bee was the emblem of the Barberini family, as afterwards of Napoleon.

In one respect this building has for more than 1000 years been the most important in Rome — whoever possessed it was for the time master of the city. When Hadrian built it, he could little anticipate the purposes for which it was eventually to be used; or that the barbarous tribes whom he saw on the confines of the Empire, in his farthest travels, would in time scatter his ashes and mar the beauty of his monument.

The best view of it is from the north side; standing immediately under it, and looking up, it has a most imposing effect, and shows itself well entitled to the name it long bore of Moles Hadrianæ.

The tomb of Alexander Severus, now known by the name of Monte di Grano, stands about 2½ miles beyond the Walls, half-way between the Via Labicana and the Via Latina, and near the modern road to Grotto di Ferrato. This ruin now forms a considerable mound, and was probably from the first a tumulus covered with earth. It contains two sepulchral

* "Nimirum apes non solum mel conficiunt sed etiam aculeatæ armantur ad pugnam, ut quæ præcelsa de sede Urbanæ liquorem sapientiæ in populous effuderunt, constante etiam fortitudine timorem provocantibus inferrent."—(Alex. Donatus apud Græv. III. 892).

chambers, one below the other — the lower being paved with Travertine, the mass of the building is brick.

It was opened in 1594, and within it was found the fine sarcophagus now in the Capitol, representing, according to some, the rape of the Sabines, and according to others, a scene from the siege of Troy; and on it lay two recumbent figures, said to be those of Alexander Severus and his mother Mammæa, although Nibby and other authorities do not admit them to be so.

The most interesting circumstance connected with this tomb is, that within the sarcophagus was found the precious Barberini Vase, now in the British Museum.

The tomb of Helena, the Mother of Constantine, is about three miles beyond the city walls, betwixt the Via Labicana and Via Prænestina.

It is known by the modern name of Tor-Pignatarra, from the large earthenware vases used in the upper part to diminish the weight—a practice found only in buildings of the Decadenza. It is of brick, of considerable extent, a total ruin, but very picturesque. There is no doubt of this being the tomb of Helen; for adjoining to it, or rather within its precincts, is a little church built by Constantine, and dedicated to the martyrs, Peter and Marcellinus, and thus noticed by Anastasius in the life of Silvester. "Eisdem temporibus Augustus Constantinus fecit Basilicam beatissimis Martyribus Marcellino presbytero et Petro exorcistæ inter duos lauros et Mausoleum ubi beatissima mater ipsius sepulta est Helena Augusta in Sarcophago porphyretico, via Lavicana, milliario ab urbe Româ tertio." The church still remains. The sarcophagus of red porphyry was removed to the Vatican by Pope Pius VI., where it is now one of the most remarkable objects in the Sala a Croce Greca. The

body of Helena was taken out of it long before, and carried to Constantinople, and there deposited in the Imperial sepulchre.*

The tombs of St. Agnes and St. Costanza — About a mile and a-half beyond the Porta Pia, on the Via Nomentana, we find remains of lofty walls and two ancient churches erected by Constantine. That of St. Agnes was built by him, at his daughter's request, above the spot where her body was said to be found, and is thus in fact her monument. It is almost subterraneous, and is entered by descending a very wide staircase of forty-five steps, the walls of which are incrusted with ancient sepulchral inscriptions.

The church has a double portico, one below the other, and is divided into three naves by sixteen ancient columns, of which two are Granite, four of Porta Santa, two of Pavonazetto, and two of them fluted in a very singular manner. The upper portico has sixteen small columns, no two of the same material; and the whole style amply proves its date to be of the fifth century.

Immediately adjoining is the church of the two St. Costanzas — the sister and daughter of Constantine. It is a circular building, and the dome is adorned by Mosaic work, representing children with vine leaves and bunches of grapes. From these ornaments it was long supposed that this was a temple of Bacchus before it was made a Christian Church, but it is now tolerably ascertained, that these figures were employed by the early Christians as emblematical of the corruption of the flesh, and the resurrection of the body.

Anastasius informs us, that Constantine built a circular baptistry adjoining the church of St. Agnes, that the two

* Socrates, Hist. Eccles. i. 13.

Costanzas might be there baptized; and there is no doubt that this building, erected for their baptism, served also for their tomb; for their remains were found within the large sarcophagus of red porphyry formerly preserved here, and removed to the Vatican by Pius VI., where it stands opposite to that of Helena, the mother of the one and the grandmother of the other. The sarcophagus is covered with representations of children, vine leaves, and bunches of grapes, similar to the Mosaics of the dome.

The mausoleum is about eighty feet in diameter, and was consecrated as a church, in the thirteenth century, by Pope Alexander IV., who dedicated it to the two Costanzas — taking their ashes from the sarcophagus, and placing them beneath the altar. The portico is formed of twelve pairs of granite columns, of the Corinthian order, one of the earliest instances of coupled columns.

On the opposite side of the Via Nomentana is one of the best preserved subterranean columbaria now to be seen near Rome, discovered in 1822. It belonged to a plebeian family of the name of Ruffinus; and it is a singular circumstance, that the name of the present proprietor of the vineyard is Ruffini — probably the descendant of the ancient occupants.

It consists of three apartments, not connected with each other. The principal—that allotted to the family—is entered by the original stone stair, and is a neat room, paved with coarse Mosaic, about 18 feet long, 14 feet wide, and 10 high. All around are six rows of niches, on each end ten niches in the row, and on each side twelve—in all 264. Each niche on the side contained two vases, and on the ends each contained three, so that in the sides the ashes of 288 persons, and on the ends of 360 — in all 648 — are permanently preserved in this small space.

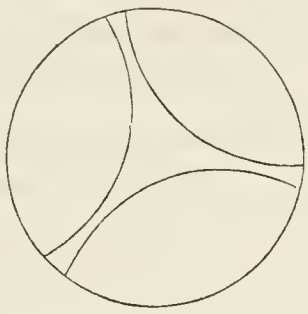
The walls are neatly plastered; many of the niches have small slabs of marble above them, with inscriptions bearing the name and age of the occupant: others have the inscription simply scratched with a style on the plaster. The two adjoining apartments seem to have been for the slaves or servants; they are only a few feet distant, and nearly of the same dimensions, but ruder in every way. They have no stone stair, but were apparently entered by a moveable ladder, and the ashes are not generally deposited in urns, but simply laid in the loculi, and many of the bones are very imperfectly burned. The accompanying Sketch, No. I., gives a correct idea of the principal apartment.

Pursuing the Via Nomentana, we see at no great distance three examples of a style of tomb which appears to have been at one time rather prevalent, viz. — a building of two storeys — the upper a small temple, or ædicula, and the lower a burying place with niches and loculi for ashes — a very natural combination.

The one nearest to the Vigna Ruffini is the most entire. The building is rectangular, of excellent brick work, resting on the Tufa rock; each front had four pilasters, and each side two, of brick, with Corinthian capitals of Terra Cotta. The second, near the banks of the Anio, and commanding a lovely view of the Mons Sacer, with the little river and the aged Ponte Nomentano, was long called that of Menenius Agrippa, for no reason but the association of his name with the secession of the Plebs to the Mons Sacer. It is of good brick work, and noticeable as an early instance of a building circular without and octagonal within. The third is more ruined, but appears to have been of the same construction. No inscriptions have been found. There are many similar buildings scattered over the Campagna, but it is disputed whether they were more than small temples. The lower

portion of them has certainly very much the look of a burying place.

Several tombs are found within the *modern* walls: thus in the Villa Altieri we find a large sepulchral monument, supposed by Burgess to be the tomb of Mæcenas. It is of brick, and composed of three segments of a circle united within a circle, and is in truth a most perplexing monument, being unlike any other in Rome.



Near the ruin named Minerva Medica are several columbaria; one of these belonged to the freedmen of the Gens Aruntia. It consists of two chambers, having, besides the usual niches for vases, several small projecting buildings in the form of altars and cippi, each containing one or two loculi. The walls are neatly plastered, and traces of painting remain — most of the inscriptions have been removed.

Tombs on the Appian Way—The borders of the Appian Way were, as already noticed, for many years the fashionable cemetery of ancient Rome. The tombs of the Scipios and of Cæcilia Metella, have already been described. Of the many others on either side which made the approach to Rome from the south, so intensely interesting to the ancients, the most part have been either greatly injured or utterly destroyed: few can be named with certainty, and of very many only traces remain.

For nearly half a mile beyond the present gate not a tomb is to be seen — all have been taken down in order to employ the materials either in the attack or repair of the walls; but on reaching the little stream now named "Aquataccio," the ancient Almo (cursu ille brevissimus Almo. Ovid. Metam. XIV.) we find the remains of several. On the left are the ruins of a large pyramidal structure, and on the right of another evidently of the first class, with a square basement and a circular tower, and having the principal sepulchral chamber in the basement. An inscription found, not in it, but very near it, seems to identify it with that of Priscilla, the wife of Abascantius, whom Statius mentions as having been interred, not burned, on the Via Appia, immediately after passing the Almo — the precise spot occupied by this ruin.

> "Est locus ante urbem, qua primum nascitur ingens
> Appia; quâque Italo gemitus Almone Cybelle
> Ponit; et Idæos jam non reminiscitur amnes.
> Hic te Sidonio vestitam molliter ostro
> Eximius conjux (nec enim fumantia busta
> Clamoremque Rogi potuit perferre), beato
> Composuit Priscilla Toro."*

The basement is built ad emplecton. The tower is comparatively small, of very coarse opus incertum, and there is a great accumulation of earth betwixt the outer edge of the basement and the tower — and as from the situation this earth must have been conveyed on purpose to the spot, we may conclude, that when erected, the tomb was a tumulus covered with earth, and planted.

The tower is now a peasant's dwelling, and is divided by two modern floors into three apartments — originally it seems

* Sylvæ v. 1.

to have been void and covered by a dome. Various ruins adjoin it, particularly a well-built handsome corridor, now used as a cartshed, and the whole gives the impression of having been a tomb forming part of an extensive villa.

Near to this are two other tombs, popularly called those of Horatia and her sister, but evidently of imperial times. One contains two sepulchral chambers, now converted into a cow-house.

Two or three hundred yards farther on we find in the Vigna Vagnolini an extensive columbarium, wholly above ground, and now incorporated into a dwelling-house. It contained three or four large apartments, each with many rows of niches for urns all around. One of them is nearly entire, and the greater part of two others remains; from the coarseness of the urns it appears not to have been for the use of the wealthy, and has been allotted by many writers to the Liberti of Augustus.

In the year 1726 the columbarium of the Liberti of Livia was discovered near the church of St. Sebastian, of two storeys, the lower having five rows of niches, and the upper four. It is described by Gorio and Piranesi with great minuteness—the latter giving no less than 300 inscriptions found in it, which are now in the Vatican, but the building itself has been entirely removed for the sake of the materials.

Several very perfect underground Columbaria were discovered near this spot from twenty to thirty years ago, but all of them were rifled of every thing they contained of value and filled up with earth. Their general plan is the same with that of Ruffinus already described—but one of them was more adorned. The accompanying small Plan, No. II., gives a correct idea of it. This columbarium contained many inscriptions, bassi relievi lamps, and other articles, but

nothing to identify it as the property of any particular family. Another of them belonged to the Gens Volusia, an important family in the reign of Nero.

We have now traced the Appian Way nearly to the Church of St. Sebastian, under which is the principal entrance to the catacombs, the melancholy hiding-places and sepulchres of the early Christians.

They are of vast but unknown extent, and it is neither safe nor easy to explore them beyond the small portion usually shown. Although these catacombs are often spoken of as if there were no other, the truth is, that the whole ground in and about Rome is more or less excavated in the same manner, and there are entrances at many other points, both within and without the walls; but it is not likely that they communicate with each other. They were formed by extracting for building purposes the Terra Pozzolana which occurs in beds and veins in the Tufa rock, as well as the rock itself, and the work was sometimes executed in later times by criminals. Quarries were the penal settlements of ancient Rome.

The entrance from San Sebastian is by a long stair descending about 50 feet. The general appearance is that of interminable vaulted passages intersecting each other, and twisting and turning, so that after penetrating a short distance, every idea of their direction is lost. Plans have been prepared of a portion which show their intricacy, but the whole might be explored without much risk by merely opening occasional accesses to the light and air through the crumbling rock. At present the ideas of their extent and direction are vague and uncertain.

It is impossible for any one to visit these dismal recesses without the deepest emotion. To them the early profes-

sors of our common faith were from time to time obliged to flee to save themselves from the fury of heathen persecutors, and here they seem to have early commenced the practice of depositing their dead. For four centuries the catacombs were their constant burying place; and also the frequent abode of the living — thankful if even there, shut out from the light of heaven, they could escape the mockeries of the courts of justice — the tortures of the arena — or the yet more brutal violence of the Roman populace.

It is difficult to imagine how a numerous population could have possibly subsisted in them; and yet, the fact seems undeniable, that at times, for months together, the Christian population of Rome had no other safe dwelling-place, and many individuals resided in them the greater part of their lives, if we may trust the writers of early church history. Ten or twelve distinct persecutions are recorded from Nero to Diocletian, and on each occasion the Christians took refuge here. It is easy to realize that they would be comparatively safe, for a few resolute men could defend the whole against any number of assailants, and only a few instances of martyrdom *within* the catacombs are recorded even by the martyrologists.

We may conjecture, that one of the first uses to which they were applied, was for meetings for public worship, and for this they were probably used even when no violent persecution raged. The worship of the Christians was obnoxious in no ordinary degree to their pagan neighbours, and they were glad of any place where they could praise and pray without interruption. Several chapels are pointed out; they are simply enlargements of the passages — the older are without any ornament, but as reverence for the martyrs increased, painting and sculpture were introduced

to do them honour, as may still be seen. There are occasional traces of tunnels by which light may possibly have been admitted, though it is doubtful if this was their use; they may be modern, and are evidently inconsistent with the great object of security.

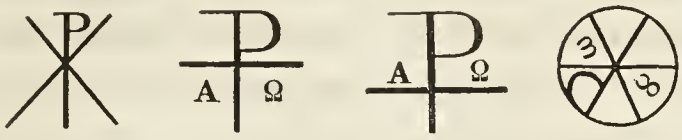
The great purpose, however, to which the catacombs were applied, not only during the persecutions but for centuries after, was as a Christian burying-place. Inscriptions declare, that here are contained the bodies of about 170,000 martyrs, including fourteen martyred popes, besides Christians innumerable who died in peace. There is no other spot in Rome where the weight of mediæval superstition presses with such intolerable weight on the Protestant traveller, so as almost to destroy even the feeling of ordinary respect in contemplating the solemn scene.

The walls of the corridors are occasionally in their original rough state, but the greater part have been smoothed and made regular by Christian hands.

The sides are *honeycombed* with rows of tombs, generally from three to five above each other, of such form and size as to allow a body to be stretched out at full length, and a few large enough to contain several. They were generally closed up in front by slabs of Terra Cotta, or of thin marble, and in a few the skeleton still remains. Most of them, however, have been dispersed far and wide to supply the wants of modern Rome.

The inscriptions have all been removed, and are now one of the most instructive portions of the Vatican museum. They occupy a considerable portion of what is termed the Christian Museum, and also of the Lapidarian Gallery. They are upwards of 3000 in number, and not one heathen epitaph has been found amongst them. The earliest Christian epitaphs generally give no more than the name and age;

afterwards the Christian monogram, in various forms, became



common at the beginning or end of the inscription.

The figure of a *fish* frequently occurs, because the letters of the word ἰχθυς containing the initials of the words Ιησους Χριστος Θεου Υιος Σωτηρ, it was reckoned an appropriate symbol. A bird bearing a small palm branch, or a leaf, perhaps the olive, is also very common. These are either cut in the slab, or drawn in red pigment, and frequently both cut and coloured.

The vaults are sometimes two or three below each other, with stairs of communication; and when we think of their extent, and the close juxtaposition of the graves, we can hardly realize the multitude of bodies which may have been here deposited. To walk through the catacombs is something like wandering through an endless churchyard, with all the graves yawning open around; and the views into the dark profound of each successive corridor, shown dimly and indistinctly by the torches of the guides, makes the whole an imposing, not to say an awful scene. This subject has been admirably discussed and illustrated by Maitland in his Church in the Catacombs.

Were we now to proceed further along the Appian Way, we could only speak of ruins similar to those we have already described — all of them unknown, except that of the Servilii excavated by Canova, who built up the inscriptions found into a most tasteless wall on the spot—and we might perhaps identify the great public Ustrinum, about five miles from the city. If we proceeded along any of the other great

roads, we could do little more than repeat the same tale, with the occasional identification of a tomb with a family. One of the most entire is that of the Plautian Family, on the road to Tivoli, and about twelve miles from Rome. It is on the same plan, but of smaller size than that of Cæcilia Metella. We shall therefore conclude with the notice of one standing on the Via Cassia, about five miles from Rome, and differing in its style from any other now extant. It is that of Publius Vibius Marianus and his wife Reginia, erected by their daughter and heiress, Vibia Maria Massima, and, notwithstanding the inscription still legible upon it, long known by the name of the tomb of Nero.

It is a sarcophagus raised upon a base, but whether a cenotaph or their actual tomb is uncertain.

The base at the ground is nearly 12 feet in front and 6 feet high, contracted to 10 feet below the cornice, which projects rather more than 6 inches, and is 1 foot 9 inches in depth; and on it rests the sarcophagus 10 feet long, 4 feet 4 inches high, with a lid 6 inches thick, having a quarter circle at each end 2 feet high, covering figures now much effaced. The front has a fluted pilaster, and a rude figure at each end, and the inscription covers the space betwixt them. The total height is 14 feet 6 inches, the width of the sarcophagus is 5 feet, and the end of the lid has its outline varied by a triangle rising betwixt the two quarter circles. The general effect is good, but the workmanship very inferior, and it appears to be about the age of Septimius Severus. It is singular, that a monument, which could so easily be thrown down, has been allowed to stand and survive many of more interest and importance. It probably owes its safety to the Via Cassia not having been the usual route of hostile armies. The base is of Travertine, and the sarcophagus of coarse white marble. The inscription sets forth

a long list of the offices held by Vibius, and it begins and ends as follows —

D. M. S.

P. VIBI P. F. MARIANI

* * * * * * * *

* * * * * * * *

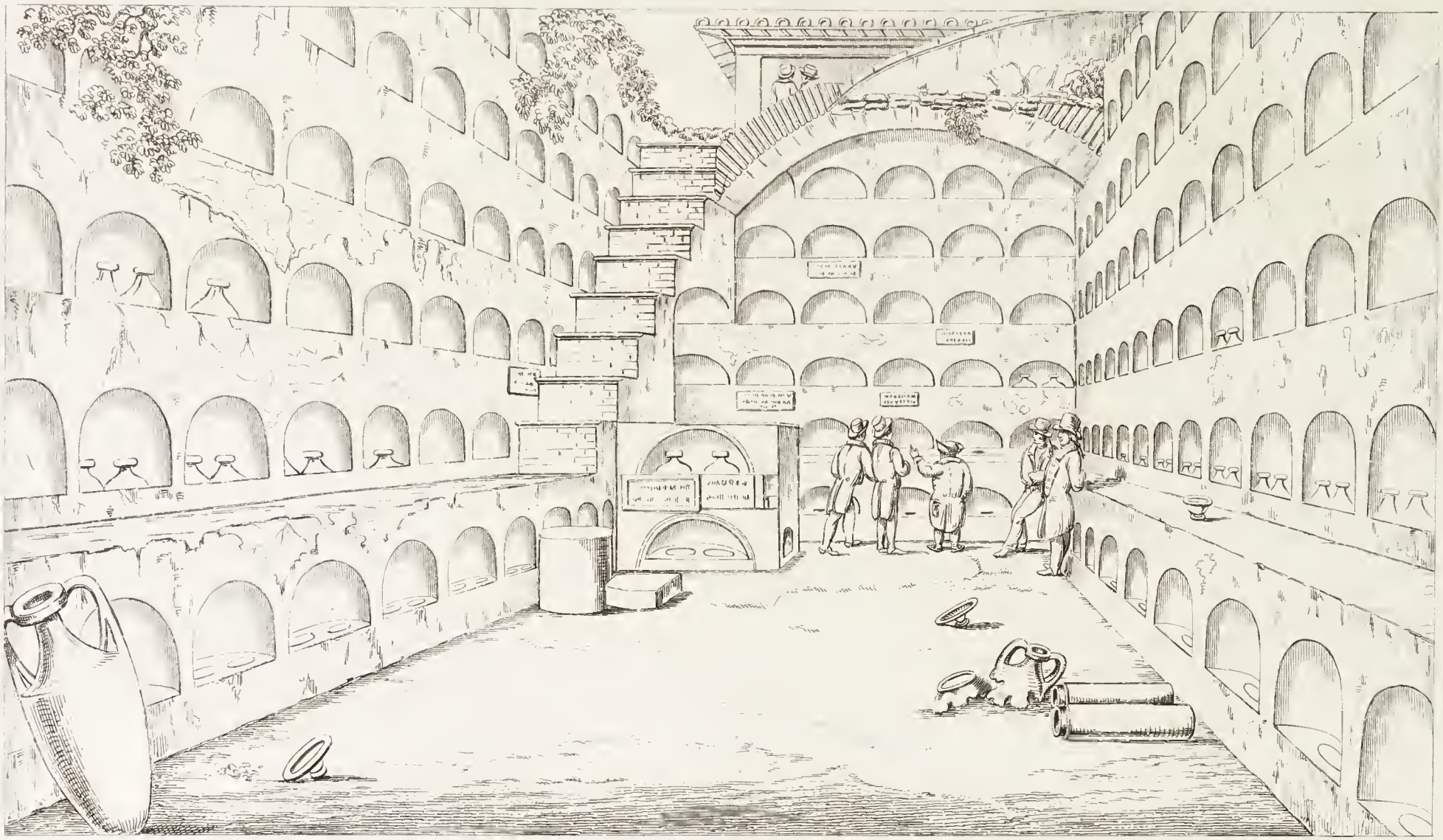
PATRI. DULCISSIMO

ET. REGINIAE. MAXIMAE MATRI

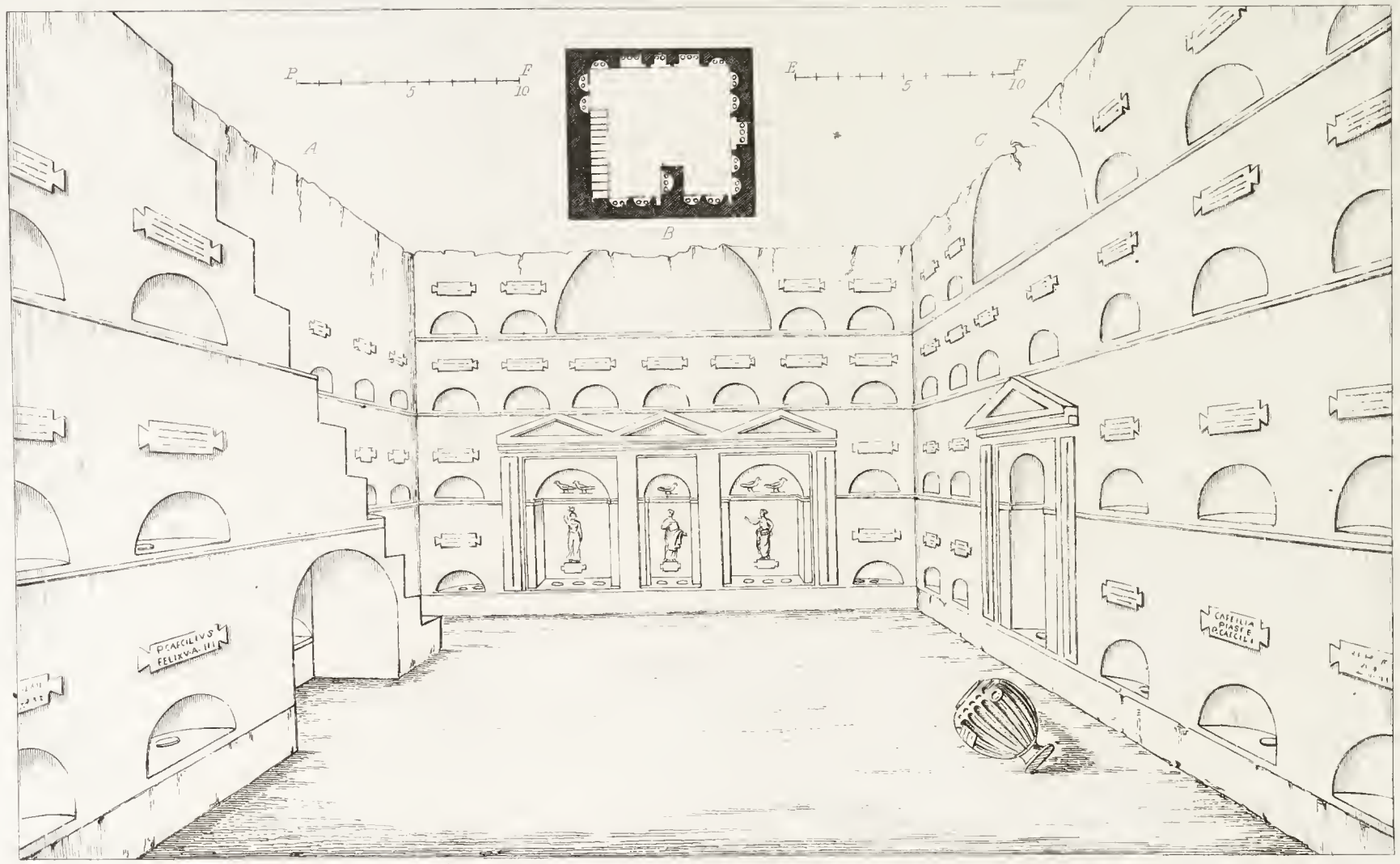
KARISSIMAE

VIBI. MARIA. MAXIMA. C. F. FIL. ET. HER.

Cimitero Sepolcrale Scoperto nel 1822. nella Vigna Ruffini fuori di Porta Pia



Colombario scoperto nella Via Appia nel 1822



Transactions of the Architectural Institute of Scotland,
Session 1853–54.

No. VII.

REMARKS ON COLOUR

AS APPLIED TO

ARCHITECTURE.

BY

C. HEATH WILSON, Esq., A.R.S.A.

Head Master, Government School of Art, Glasgow.

[*Read at the Meeting of the Institute in Glasgow, on 23d February*, 1854.]

When we look around us and remark the profusion with which nature has employed colour, and the brilliancy of the hues with which she has invested so many of her productions; when we reflect on the pleasure and delight with which all, except those of unhappily defective vision, regard the varied tones and colours of natural objects; when we remember the universal disposition which has been manifested by mankind in all ages and countries, to imitate in their works the pleasing effects produced by the colours with which the heavens and the earth are invested, to dye their garments, colour their buildings, and even stain their persons, with the intention of thus making them more beautiful and pleasing; and when we also reflect, that this love of colour manifested

itself in the employment of colours to symbolize ideas, and that they were thus connected with religion, with human happiness and human sorrows, we may feel some surprise that so little trace should remain amongst us of these natural and universal feelings, and that we should prefer whitewash in our temples, drabs and other neutral tints in our houses, and should clothe at least half the creation in the lugubrious tones which men generally wear, whilst even amongst the other half, the tertiary hues are more connected with what is called being "ladylike" than the primaries and secondaries, which are thought bold, staring, and even vulgar. It is difficult to explain why high civilization and greys and drabs should thus go together; how a people proves its refinement by a quaker-like abjuration of colour; why it should be thought necessary to invest our churches, municipal edifices, and public halls, with such sober and unmeaning hues, and that in our private residences we should paint our dining-rooms, so that they chiefly resemble the interior of large wooden boxes,* our halls to remind us of the cold exteriors of our houses, and of the aslar of which the painting is but a bungling imitation, whilst in the other rooms a little lively colour, if met with here and there, excites surprise, as well as some doubts of the taste, perhaps of the sanity of the proprietors of the house.

It is interesting to observe the effect of climate in connection with this subject. I have remarked, that as we travel south, the love and use of bright colours increase, that there is even a marked change as we advance from the borders of Scotland, and that spots of colour gratifying to the eye of the landscape painter, become much more com-

* It is a common practice in the west of Scotland to paint the walls and ceilings of dining rooms in imitation of oak.

mon in England than with us, in the costumes of the people, about the doors of inns, in river and canal boats, and in other instances sufficiently familiar. Southwards, after crossing the Channel, the use of glowing colours becomes more universal, till in Italy the most brilliant hues are seen, in the dress of the peasantry, in the decorations of churches, when hung with silks and velvets on festival days, and in the garments of the priesthood. This love of colour is also manifest in the fine arts, and has preserved in Italy a school of ornamentists, whose works far excel the generality of the decorative works of this country.

The pictures of the old masters assist us to estimate the effects of climate upon what, to use a technical expression, I will call the eye for colour of a people. In adopting this phrase, and in all the remarks which I make in this paper, I refer to the employment of the primaries and secondaries, and to their harmonious contrasts. The Dutch painters, living under a cloudy sky, have more of grey and pearly tints than those of any other school; nor can the Flemish Rubens be quoted as an example which militates against the general state of the case, for he was strongly influenced by Italian example. His great pupil, Vandyke, when at Genoa, painted with the force and contrast of an Italian master; but when he settled in England, his deep tones and powerful oppositions of colour gave way before a silvery style of painting, more in harmony with the grey tones of our climate. In Italy, painters dipped their brushes in the hues of the ruby, the sapphire, and the emerald; they painted the delicate blue skies of the climate, the rich warm tones of the scorched landscape, the fair tints of the marble palaces, the deep olive of the southern complexion, and the gorgeous colours of the national costumes. In these instances we trace the influence of climate; and if we find

this view unsupported or controverted by the practice of any people, we may feel assured, that other influences of a potent nature operated to weaken the sentiment for colour. The Spanish school, for instance, may be cited; but in this country a maiden princess could wear her shift for two years under a religious vow; dirt was a religious virtue, and gloom sat enthroned in her palaces. If, on the other hand, we look to the art of the Moorish possessors of the fairest provinces of Spain, we find in it a love of gay colours and brilliant harmonies congenial to the sunny climate, and in harmony with the feelings of every southern country.

To estimate aright the subject of my remarks—the application of colour to architecture—we must look into it historically, and I now propose to review briefly the systems and practice of ancient people, and to follow the path trodden by artists from primitive times to a late period. The use of colour as an integral portion of buildings dates from the earliest times; the ideas of the ancients were obviously opposed to ours; whilst we think (judging by our practice) that the use of coloured decorations impairs the dignity of an edifice, and that the application of colour to mark external portions of the architectural details, is utterly barbarous, the most refined and polished nations of antiquity thus applied colour, and their practice was followed by our mediæval ancestors. The solemn temples of Egypt, so remarkable for the simple grandeur of their design and their imposing dimensions, were emblazoned without as within with colours which remain on them to this day. By the Greeks, a people incapable of bad taste, temples were painted externally as well as internally; the pure Parian marble of the Parthenon glowed with vermilion, blue, and gold; and, judging by the fragments of temples in Pompeii, the Italians also employed colour on the exteriors of their edifices. A practice so re-

pugnant to our ideas of the true principles of taste as this, was at first utterly disbelieved and denied by writers on art; as the proofs of it however became more evident and undeniable, they were forced to acknowledge the fact, but many adhere to their repudiation of the principle. I have always felt a doubt whether this practice was adhered to by the Greeks on a principle of taste. In expressing this doubt, you will readily perceive that my feeling is against it, so far as the exteriors of buildings are concerned, and that I am seeking an apology for the Greeks, which perhaps they do not require. So deep is my veneration for the art of this people—so absorbing my appreciation of their perfect taste—that where I find my feelings involuntarily opposed to any practice in art of theirs, I believe myself to be in the wrong; but as regards this question, of the application of colour to the exteriors of buildings, there is room to think that it was not persisted in from motives of taste, but from those of another kind, to which I shall presently allude, although I cannot doubt that in the first instance, and during the archaic period of Greek art, it was adopted in a great measure for the sake of decoration only. It appears to have been the practice of all nations, from time immemorial, to paint the exteriors of their buildings. That this should have been the case where these were formed of wood, can excite no surprise; and we can easily imagine, that the residences of chiefs, and the temples of the gods, would be painted of finer colours to distinguish them than the dwellings of the people; the practice was therefore naturally established. The edifices of the Chinese are striking examples of these ideas. It seems more difficult to account for the rise of the practice in connection with stone edifices; but the primitive residences of men in most countries were universally of wood, and when wooden constructions for important purposes gave

way to stone erections, it is easy to imagine, that established customs would be retained in decorating the buildings of a solid material, and that the architects of those days were more influenced by custom than by aesthetic considerations, which could hardly have any place amongst primitive people in their first efforts in art; thus we find that the constructive members of wooden edifices were retained in those of stone; and so firmly rooted were these original ideas, that when resting places for the dead were cut in the eternal rock, the forms of the slightly-built homes of the living, made of beams and reeds, were retained; it is not surprising, then, that the practice of colouring should have remained when the change of material had so little influence on the general form. There is another source from which the use may be traced, and which is probably its origin in countries like Egypt or Assyria, where buildings were from all times made of solid materials, and where wood for such purposes was so scarce. The symbols of the gods were painted of divers colours to aid their significance; hieroglyphics, another class of symbols, were also coloured; and the sculptured pictures which adorned the walls of temples and tombs were painted with brilliant colours, to make them liker the subjects which they represented, and more intelligible to the people; thus colour was largely used in the external and internal decorations of the buildings of the Egyptians and Assyrians, and was considered as necessary to the completion of a temple or palace as any other material used in its construction. That the practice should be adhered to in Egypt is not surprising, when we consider by what laws the arts of this people were fettered; but with our ideas, it is not to be wondered at that the adherence of the Greeks to it, when the arts of design were perfected, should have been questioned and even denied. That they did adhere to it

is now admitted on all hands, and I cannot help believing that religious custom had more to do with it than aesthetics. The history of mankind amply demonstrates the perpetuity of old usages and of ideas connected with them; superstitious practices and feelings outlive all changes and reforms; pagan rites survive amongst Christian people; and it is therefore not surprising, that a time-honoured usage, which had obtained a religious significance, should have been maintained in Greece, when true principles of taste militated against its preservation, if we are right in our view that the painting of the exteriors of buildings was in reality bad in taste.

We have plenty of modern instances of a superstitious adherence to ancient practice in art with and without the religious element; with it, when we find the multiplication of sacred images in foreign countries under old forms now unknown to the practice of art; without it, when we find our glass painters and decorators perpetuating the imperfections of ancient art under the specious pretext of being correct in style. Whilst it appears to me that the practice of painting the exteriors of our public edifices with various colours is one in which we cannot imitate our great guides, the Greeks, I am equally indisposed to follow their example in colouring statuary. I lean to the belief, that this also was a religious practice, but I am satisfied that both in this case and in that of the employment of applied colour on temples, so far as it is possible to manifest taste, there can be no doubt that it was manifested by the Greeks in the purity, delicacy, and propriety with which they applied and contrasted the colours; it was something very different from the specimens of such coloured decoration which we see in our own country, and the pure white temple reared against the dark blue sky of Greece, and backed by the rich warm tones of her landscape may have

required (for we ought to look at the subject in this aspect also) some colour on parts of the architectural details to harmonize the work of man with the gorgeous hues of southern nature; this I say, may have been the case, and we are hardly judges here, but we can decide for ourselves, that the exteriors of our edifices look best under our grave skies, and with the tones of our landscape, free from painting, which would impair their dignity and repose. Nature with us wears a graver aspect than she does in the south, and our works ought to harmonize with her character.

If we pass from the contemplation of ancient and classic examples to those of more recent periods, we find the love of colour in alliance with architecture developed in brilliant examples which remain to our day; we see reds of different tones, greens, blues, greys, white and black in one façade, and masses of gold besides; but mark the difference between these works and the early temples of the pure classic era: in the latter case the colours were applied, they were painted on the white marble or white cements; but in the former case, the Byzantine Temple, they were the rich hues of the precious marbles, porphyries and granites of the building, or those of incrusting Mosaics, durable as the building itself.

The employment of coloured marbles, and of porphyry, serpentine, and the granites, as portions of the exteriors and interiors of buildings, increased with the wealth and power of Rome; at first they were used with a certain moderation, as in the Forum of Trajan, where the shafts of the columns were of grey granite, whilst the entablatures, bases, and capitals, were of white marble in the Temple of Antoninus and Faustina, with shafts of Cipollino, all else being white marble. In sculpture also, we have a gradual growth of this use of coloured marbles, the faces and necks of busts being cut in white, whilst the drapery was

formed of breccia, gialloantico or some other coloured marble, and in some cases the hair was executed in bronze. These are examples which I trust will never be imitated by our sculptors. With the decay of the Roman empire, the employment of coloured marbles in art increased, and attained the fullest development in the Byzantine style, of which it is a predominant characteristic, necessary to its vitality and expression; for the Byzantine appeals to the senses more by colour than by form; the first is harmonious and nobly monumental in character, the latter clumsy and disproportioned. I need not do more than allude to St. Mark's at Venice, the great type of the Byzantine Temple, coloured within and without; all is real and precious: nothing merely imitative or deceptive by the substitution of a poor or cheap material for a costly reality.

It seems surprising that a principle so important, an idea so great, should belong to an art so barbarous in its forms as the Byzantine, in which, as I have observed, all true principles of proportion between the parts seem to be as much lost sight of as in the ghastly forms which glare down on the worshippers from the golden walls. I would, however, remark, that rude as those old Byzantine saints may be, they are solemn and impressive beyond the representations of similar holy personages by the artists of schools claiming a higher position in the annals of art; and, disproportioned as the orders and details of the architecture may be, there is a feeling — a soul in the design and execution — which we shall look for in vain in the art of our own time.

The Byzantine style and method of decoration prevailed in Italy, and was practised by Greek artists till an Italian school was formed of sufficient power to inaugurate a change. Cimabue was the great leader of this native school; and, whilst his style of painting partakes of the Byzantine

character, and his architectural decorations particularly so, his great powers are evinced in his originality of treatment, improved form, and escape from the cold formality and lifeless conventionality of his Greek predecessors. Those who estimate this remarkable man's works by comparing them with those of later ages, do him great injustice; they must be compared with those of previous times, and thus viewed, we cannot fail to feel the propriety of the verdict of posterity, which ranks him amongst the great men of the past. His pupil, Giotto da Bondone, carried the manner of his master to still greater perfection, and his architectural decorations are remarkable for a purity of style, elegance of form, and chasteness of colouring, which places them very high amongst the decorative designs of the best periods. The works of these two great artists mark a prominent and important era in architectural decorations. We observe that the mediæval coloured decorations of Italy were in the first place Byzantine, retaining in the ornamentation the forms of classic decoration, some of them in remarkable purity, but in most instances rendering them harshly and clumsily. By Cimabue and Giotto the same forms were purified and refined at the close of the twelfth and the commencement of the thirteenth centuries.* There are few indications of what we term the Gothic style in the works of these artists,† but it to a certain degree influenced their followers, of which fact the works of Avanzi, a pupil of Giotto's at Padua, are an evidence. Still the Gothic style hardly obtained a footing amongst Italian painters; a few of its forms were adopted, but the classic element maintained its ground, till its complete revival in the 15th century. In architecture, however, Gothic

* Cimabue died in 1300; Giotto died in 1336.

† The dog-tooth ornament on a coloured ground is common in the works of Giotto at Assisi.

forms obtained a certain pre-eminence for a time; clustered piers, mullioned windows, and pointed arches — three great features of the Gothic style — are found in various great edifices; but they are imperfectly developed; and when we examine the ornamental details, we are struck at once by the evidence of classic tradition everywhere visible, except in cases where foreign architects were employed. The most remarkable example of this imported Gothic art in Italy is the Church of St. Francis at Assisi. The design of this edifice, built in the first half of the 13th century, was the work of Jacopo Alemanno, also called Lapo or Papo di Arnolfo, father of the eminent architect, Arnolfo da Lapo, who built the Cathedral of Florence, the dome excepted. Of German origin and education, Jacopo Alemanno gave a more decidedly Gothic character to this church than is generally observable in other edifices of this style in Italy; but, whilst it is thus remarkable as a specimen of a style and of the work of a foreign architect, it is still more remarkable and important in the history of church architecture, as its coloured decorations must be regarded as marking one of the most important eras in the development of modern painting. Before adverting to these decorations more minutely, I may here introduce a few brief remarks on the method of colouring decorations, followed both in the classic and mediæval era.

The oldest specimens of coloured decorations which I have seen, are those in the Etruscan tombs at Chiusi. The walls of the excavated tomb were prepared for painting upon by the application of a coat of lime whitewash; when this was dry, an artist, evidently of great skill as a draughtsman, outlined the figures; it was truly outlining, for he did not draw in any of the internal markings of the figures, but only the external outline; a stylus was obviously used, as the

indent made in the wall remains. This practice of marking the outline with a point or stylus was retained by the Sienna school to a late period, even in pannel pictures; and as if to prove the durability of habits in the south, I found that the artists of this school marked, in the external outline of the figures only, precisely as their Etruscan predecessors had done 2000 years before — the only exception to the practice being the figure of the Virgin Mary, the whole outline of which, including the folds of the drapery, is always marked in by the stylus, a peculiarity which, I believe, may readily enable us to distinguish pictures of the school of Sienna from that of Florence.

The draughtsman having completed his outlines in the Etruscan tomb, was followed by the colourist, whose task was a very easy one, as it consisted in laying a flat tint of red over the flesh, and the appropriate colour on the draperies in the same simple manner; no attempt was made to represent light and shade. The same artist, or another, then put in the internal markings omitted by the outliner—that is, the muscles and folds in the drapery; and, strange to say, whilst the external outline was perfect, these internal outlines or markings were miserably executed, and utterly false in drawing. In the course of time, it was remarked, that by the addition of white, the colours might be lightened, and a method of painting was gradually matured, which employed pure colour to represent shadows, and the same colours mixed with white to represent gradations of light. It is rendered obvious by the paintings in Pompeii, that this very simple method of painting was modified; for in these the shadows have a brown tone, but there is no symptom in them of any knowledge of the mixed tints and broken hues employed in modern art. The artists of the middle ages returned to the primitive method of pure colour for shadows,

and of the same colour mixed in different proportions with white for the half tints and lights. Such we find to be the method of painting followed, for many centuries, till the introduction of oil painting led to new modifications.

To the architect, the ancient method is the most important and interesting ; it is conventional, abstract, and ideal, luminous, broad and simple in its character ; it harmonizes with the forms of architecture ; it is, in fine, architectural or monumental painting. The modern system is admirably adapted to easel pictures ; but we have to remember this important principle, that a work of the art of painting, complete in itself, and regarded as such exclusively, is a very different thing from a painting which forms a part of the design of an edifice. In this case it is no longer an independent work; it must be architectonic, monumental, like the edifice of which it is a part; in modern times this important distinction seems to be understood by a few only. It has been fully appreciated by the Corneliuses the Hesses and the Schnows of the Munich school of artists ; but in France it has not been equally generally understood, notwithstanding the great learning and ability of the French artists. By ours, so far as I have had opportunity of seeing their works, it has been overlooked altogether.

From the Byzantine style, we may proceed to consider the Romanesque and Norman, in which, similar as they are to the Byzantine in many respects, and particularly in the character of the details of ornament, they differ in the frequent employment of the open wooden roof, which, although not entirely displacing vaults, is so common as to become an attribute of these styles, whilst a Byzantine edifice is imperfect without a vaulted covering. In the Romanesque and Norman edifices, the exteriors were built in alternate courses

of white and black, or some coloured marble, a fashion imported from the East, and which survived in Italy in some of the most remarkable edifices of a later style, as, for instance, in the Cathedrals of Florence, Sienna, and Orvieto. Combined with these striped elevations, we have Mosaics in archways, panels, and other appropriate portions of the exterior; nor must I omit to mention rich marble shafts, although they are not so copiously used as in Byzantine architecture. With the display of wooden construction internally, we find a prevalence of painted decoration. The superbly painted roof of the Cathedral at Messina, executed by Saracenic artists, is a noble specimen; and the necessity of colour to the completion of a church being felt by all, where means and opportunities did not permit the use of Mosaics, recourse was had to paint. The walls were incrusted with a thin but very durable cement, and were painted in tempera before the revival of fresco. These painted decorations were frequently imitations of the geometrical designs of some forms of Mosaic ornament. So prevalent were the ideas introduced by the Mosaicists, that we shall find they survived marked changes in style. There can be no higher testimony to the pre-eminence of a style than this vitality, this persistent attachment to its forms. However we may differ as to the claims of the Byzantine, its influence for a long period is incontestable. I am bound to advert to that glowing and magnificent variety of it, which, under the name of Moorish, is preserved in the decorations of the Alhambra; but I cannot do more than advert to it, as I have not seen that remarkable monument, in which, however, it is evident, that nowhere have glowing colours been employed more effectively or more harmoniously.

It would detain you too long, did I attempt to describe early specimens of painted decorations more fully than I

have done in the remarks upon edifices of the Romanesque period. I shall therefore now turn to Gothic art, and to the church of Assisi, the noblest existing monument of the coloured ornamentation of this style, executed by the greatest artists of the period, Cimabue and Giotto — a monument which, I may say, is without a parallel in any country.

Much has been claimed for the truth and sincerity of Gothic art, and the art of the revival has been reviled and degraded, because it has dealt so much in imitation, and what some critics term falsehood; but what are the facts of the case? in the great Gothic monument under consideration, the lower parts of the walls within the church are painted to represent hangings, the piers are painted to represent Mosaic ornaments, so are the ribs of the vaultings, and the blue and starry vaults of the church representing the blue and starry vault of heaven. The Gothic era dealt in these imitations largely, and this taste was universal.

But we must do justice to the painters of this period; the walls were covered with tempera or fresco painting, executed on sounder principles than similar works of a later period. We may glance for a few minutes at the successive ideas which prevailed on this subject. The Byzantine artists, from whom we have not yet escaped, placed their figures on a ground of gold; walls and vaults shone with this burnished gold; it would appear that it symbolized the light and glory of heaven. On this ground were represented the Saviour, apostles, prophets, martyrs, and the whole host of heaven, in glistening white garments, or in the coloured robes of their rank and orders. When the native Italian artists assumed the lead, they retained, for a time, the golden grounds in their easel pictures; but in churches, Mosaic gave place to painting, and instead of the gold ground, we find a ground of blue used. Cimabue used a deep blue, Giotto, his successor,

a lighter blue; gradually the true colour and appearance of the sky was introduced, and Avanzi, the pupil of Giotto, abandoned the conventional system of his master; but it was revived from time to time by Mantegna in the Eremitani at Padua, by Daniel da Volterra in the Farnesina, and by Raphael in his famous frescoes of the same Villa, as well as by other artists; nor was the gold utterly forgotten. Fra Beato Angelico, if my memory is correct, revived the Byzantine background of gold in his frescoes at Orvieto.

The subjects were at times painted on the blue back ground, in what we call the vignette form; that is, the edges of the pictorial composition were not brought down to the bottom of the picture or carried out to the sides; but this was not often the case. These pictures were surrounded or framed with arabesques or painted ornaments of various colours. The blue of the backgrounds spread over the vaults, and was spangled with gold stars, either gilt or made of gilt earthenware. In some of the vaults, heads of saints were introduced, one in each spandrel between the ribs, surrounded with ornamental borders. At a later period, entire figures of saints appeared, or rather reappeared, for thus they stood or sat enthroned in the Byzantine style. It would occupy too much of your time to describe all the varieties of this old conventional school of church painting. To the artist and amateur, accustomed exclusively to modern works of art, and to modern ideas, these old works seem stiff, hard, and ungainly, but to those who consider them with reference to the period of their production, and the preceding history of art, they are evidence of the handywork of artists of extraordinary powers, of mighty genius, and who knew and practised principles in architectural and monumental painting which are truer and greater than those which have guided the pencils of subsequent periods.

We now approach the Revival. Masaccio, Fra Beato Angelico, Benozzo Gozzoli, Luca Signorelli, Ghirlandajo, and others, opened up new paths in art, retaining the old monumental style of colouring. We trace in their works the growth and spread of forms borrowed from classic examples, but made more beautiful by these extraordinary men than their original types.

The general system of coloured architectural decoration of these pre-Raffaelite masters was Gothic in the idea and division, but classic in the details; we have pictures on the walls, and decorated borders, but the background and ornaments are of classic origin; perspective gains ground also; the vaults are still blue, but the figures are nobly drawn and designed, whilst new varieties of diapering and ornamentation appear. The imitation of Mosaic ornaments gives place to arabesques, but it is to be observed, that these are mostly borrowed from marble originals, there is as yet no trace of the imitation of classic painted decorations. The exteriors of churches exhibit little colour at this period, as compared with the Byzantine. The singular system borrowed from the East, which I have already alluded to, of building in alternate courses of white and very dark marble, was adhered to, whilst over the doors Mosaics held their ground. At Orvieto, we find works of this class of a comparatively modern era.

A great change in monumental painting and decoration was established in the age we have now reached — that of Michael Angelo, Da Vinci, and Raphael. I have alluded to the ideas of classic ornament of the older school of painters being derived from sculpture, particularly reliefs. Thus we find in the quattro centisti, or first Revivalists, representations in the backgrounds of their pictures of buildings, disproportionate to the figures—much too small in fact. This

practice of reducing the size of the buildings is common also to the Mediæval School, adherence to it in the Revivalists I ascribe to their imitation of the reliefs on the triumphal arch of Marcus Aurelius, now demolished, that of Constantine, and other similar works. In the time of Raphael, the discovery of the baths of Titus, and the numerous painted chambers in that extensive edifice, suggested new ideas to the painters of the time; and the designs of Ludius, who flourished at the close of the Roman Republic, and which were sneered at by Vitruvius, became guides to the painters of a much greater period of the art of painting. The thin-columned temples, which were especially abominable in the eyes of Vitruvius, were reproduced by Raphael and his school, in combination with other fancies of the Ludian period; and so determined was the disposition to imitate, and such the immense influence of classic works on the minds of the great artists of this era, that the appearance of the painting or manipulation of the ancient works was reproduced as carefully as means would allow. The arabesques in the Loggia are not only derived from ancient works in respect of the design, but are made as similar to them as possible, in respect of the execution; thus we see in them the brown shadows and richly loaded lights of the classic school of ornamentists. At this important period of the arts, external painting, or the colouring of the exteriors of buildings, is presented to us under an entirely new phase, and I confess I think a most objectionable one. In Rome, the practice does not appear to have taken root; but in the north of Italy, particularly at Venice and Genoa, we find many specimens of the system which I am about to describe. I also recollect examples of the same taste at Florence, Milan, and in other towns. I allude to the practice of finishing the fronts of a house in plaster, and then painting on the plaster represen-

tations of the architraves, string courses and mouldings necessary to a fine and complete design, as well as niches with statues in them, and imitations of coloured marbles and ornaments. The wrecks of these external paintings remain, and the practice has been adhered to to the present day, particularly in Genoa; but although pilasters and mouldings are still painted, niches and statues in them, as well as ornaments, requiring skill and clever men to execute them, have disappeared in a city in which art has fallen to a miserable level, and greens, pinks, and yellows, are now laid over the façades with unsparing hands, taste seems dead in that noble city, *Genova la Superba.*

In Florence, a method of external decoration, called sgrafitto, and which is very beautiful, is still practised; it is inherited by the present race of artists from the best period of the revival. Some remarkable examples ascribed to Polidoro da Caravaggio remain at Rome. The façade of the house being finished in white cement, was then coloured in parts, or all over with black. I do not know the nature of the medium used: it was, however, a water-colour, which was capable of resisting wet. The ornaments were scratched upon this with a stylus, which removed the black colour, leaving a clear white outline; the lights in the figures were scratched out in the same way in the form of bold cross hatching; the effect is admirable, and the process might be advantageously imitated in this country in conservatories, green-houses, and other garden erections, in which I have always thought our love of no colour might be sacrificed to a little agreeable Polychromy.

I have now briefly reviewed the practice of different ages as regards the application of Colour to Architecture. I may thus sum up the result of our examination of this subject.

The Greeks painted their edifices internally and externally — the internal paintings were probably decorative designs, complete in themselves, yet allied to and harmonized with the building. Pictures unquestionably were painted on the walls; and as Pausias' painted garlands, as the birds were deceived by the fruit of one artist — no great feat I confess — and another was taken in by a rival's representation of a curtain, it is not improbable that these elements were employed in internal decoration. Externally, colour was used to relieve sculpture, to mark and ornament mouldings, but little more. There was no attempt at deception, unless the ornaments on the mouldings may be considered such, which I do not think they were. In the Roman period, we find in the internal decorations of buildings an unfettered luxuriant fancy, the gayest colours, the strongest contrasts, and an obvious intention to delude the spectator by attempts at linear and aërial perspective, by the introduction of painted mouldings, substitutes for real ones, apertures in the wall devised by the painter, where the architect manifestly intended all to be solid. Externally, the Greek practice remained, but probably in a coarse form. Red became the more prominent colour, judging by Pompeian remains taking the place of the blue backgrounds of the Greeks. We pass to the Byzantine era, and find a new idea; that the colour and gold was symbolic in the Mosaics I do not doubt, but the external mass of the edifice of variegated marbles had no symbolic meaning. It was desired to make the house of God glorious in its outward appearance, an idea which gained ground with the growth of hierarchical and priestly power, for at an earlier age of the Christian Church, Hypolytus, Bishop of Pontus, in the third century, said, that it was not the house which sanctified the man, but the man who sanctified the house.

During the Romanesque and Norman periods, we find exteriors striped with light and dark marbles. An example of this striped architecture exists in England, in a village church about a couple of miles from Torquay, on the road to Devonport, the only one which I have observed in this country. We have seen at this period the growth of painted decorations, and its subsequent increase during the Gothic era; and I have remarked, that this architecture is not altogether free from the reproach lavished upon that of the Revival, but that, besides the legitimate use of the painter's art in the completion of the architecture, it offers examples of mock mouldings, and the employment of paint to represent the costly materials used in the ornamentation of a preceding age. So much has been said of the honesty of the Gothic, as distinguished from the falsity of the Revival, that I have thus particularly adverted to a practice common to the most remarkable ages of art.

A gradual but very traceable decay of sound principles is manifest in the first and still more so in the second era of the Revival. Notwithstanding the defects which I have alluded to in Gothic monumental painting, these are of small amount, as compared with those of the Revival, for, although the painter of the Gothic period added a few details to those of the architect, yet he recognized and adhered to the all-important principle, that the painting must be subordinate to the architecture, that the construction must on no account be interfered with by the introduction of ornaments or apertures inconsistent with it; but, at an early age of the Revival, Bernardino Luini and other artists in the Chiesa Maggiore at Milan, showed their ignorance of, or defiance of this vital principle, by painting apertures in the walls, and annihilating in appearance the architect's

design. Michael Angelo, in the vaulted ceiling of the Capella Sistina, painted a series of subjects utterly inconsistent with that position, and utterly at variance with the fundamental principles of the structure. Raphael, in the Loggia, annihilated in appearance the vaults of the compartments, and introduced columns, balconies, and other architectural accessories, in situations which may be spoken of as architectural impossibilities; his followers violated with equal indifference architectural proprieties. At Venice, Paul Veronese distinguished himself in the same manner, and buildings appear at last to have been considered mere vehicles for painters' extravagant fancies. Annibale Carraci, in the Farnese Palace, imitated the method adopted in the Sistina, and covered a vaulted ceiling with gigantic figures, sculptures, pictures, and picture frames, by means of the art of fresco—noble art thus recklessly abused; but the great pupils of this remarkable school exceeded all that had yet been done in the direction of bad taste. No longer limiting their frescoes within the mouldings of the architectural designs, they endeavoured to make it appear, that they projected from the surface; Domenichino plastered over portions of the mouldings, and painted on these overlaps parts of the limbs of the figures, whose bodies occupied the panels; finally, artists of this school broke down the cornices, and represented figures descending from above, or falling angels expelled from heaven and tumbling in every kind of strange attitude into the body of the church, dashing down in their headlong course the cornices and architraves of the miserable architect.

These monstrous ideas descended as heir-looms to the artists of the last century; and specimens of similar sprawling compositions may be seen in our Royal Palaces—last convulsive throws of dying architectural decoration consigned

to a dishonourable grave at the commencement of this century, and still dead. Dead, for the polychromatic efforts of the house decorators of the present day, the imported fancies of the Caffés of the ci-devant Palais Royal, or the offscourings of the ornamentists of Munich, cannot be thought of for a moment as the representatives of artist decorators of the past, Cimabue, Giotto, Raphael and his wondrous school, or the men of Bologna. With all their faults and extravagances, the worst of these artists were giants to the pigmies of the present day. Architectural painting in its true meaning and lofty attributes, is dead — it died in the age of hoops, buckram, and bag-wigs; and it is for the consideration of such societies as this how it is to be revived. I have pronounced no opinion in this short paper on the principles which we ought to adopt and encourage; this part of my subject I leave for the discussion which I hope is about to ensue.

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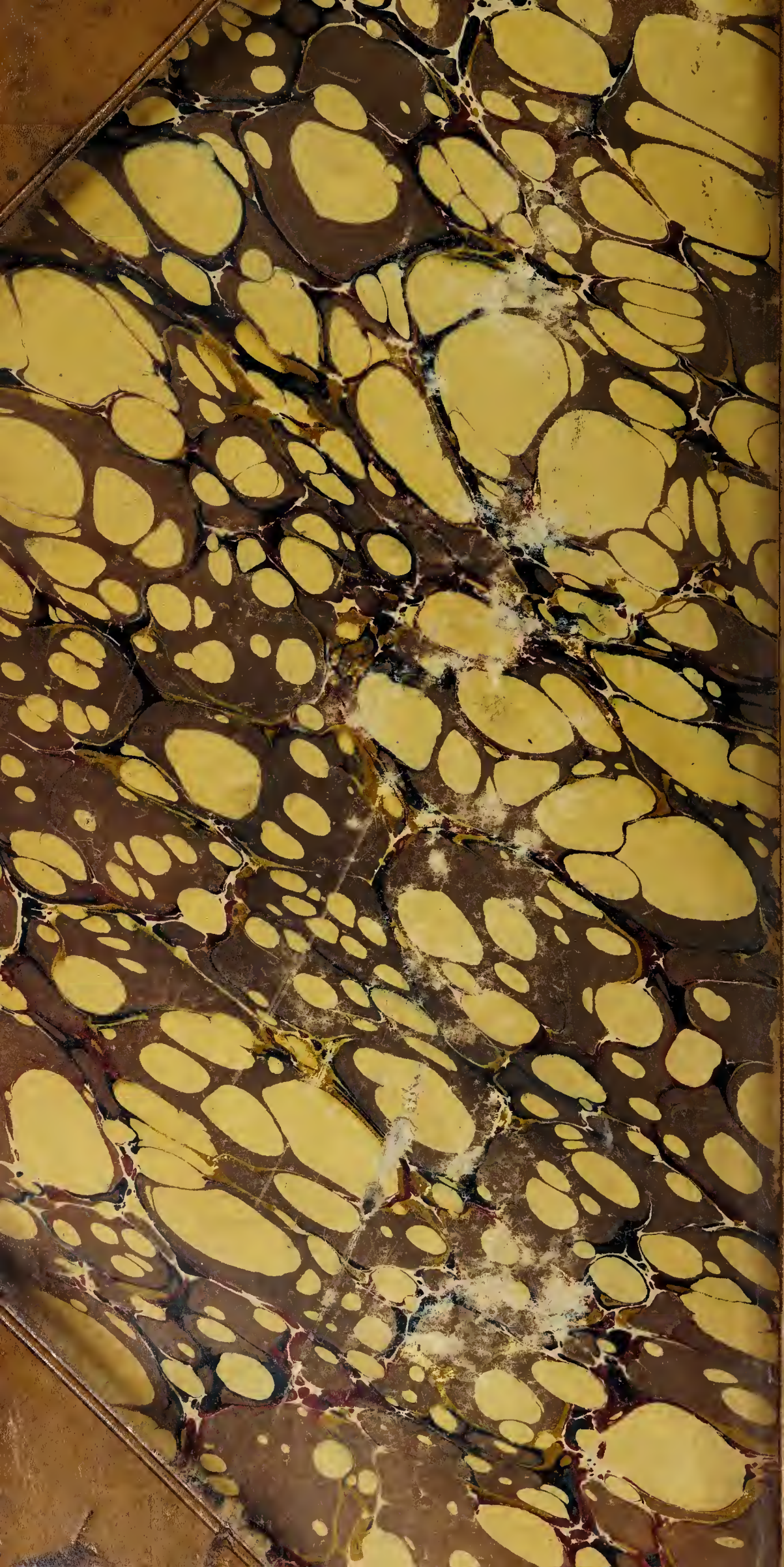
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